United States Department of Commerce
Technology Administration
National Institute of Standards and Technology

NISTIR 5035

Time and Frequency: Bibliography of NIST Publications

Gwen E. Bennett
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March 1995

U.S. DEPARTMENT OF COMMERCE, Ronald H. Brown, Secretary
TECHNOLOGY ADMINISTRATION, Mary L. Good, Under Secretary for Technology
NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, Arati Prabhakar, Director

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PUBLICATIONS DEALING WITH TIME AND FREQUENCY TOPICS
(and sources for obtaining them)

BOOKS

The Quantum Physics of Atomic Frequency Standards, 2 Volumes, C. Audoin and J. Vanier (Adam Hilger, Bristol, England, 1989).

Precision Frequency Control, 2 Volumes, E. A. Gerber and A. Ballato, eds. (Academic Press, New York, 1985).

From Sundials to Atomic Clocks, J. Jespersen and J. Fitz-Randolph (Dover Publications, New York, 1982).

Frequency and Time, P. Karaschoff (Academic Press, New York, 1978).

SPECIAL ISSUES OF JOURNALS

Time and Frequency, Special Issue of Proc. IEEE, **79**(7), 1991.

Frequency Control, Special Issue of IEEE Trans. UFFC, **UFFC-34**(6), 1987.

Radio Measurement Methods and Standards, Special Issue of Proc. IEEE, **74**(1), 1986.

Time and Frequency, Special Issue of Proc. IEEE, **60**(5), 1972.

Radio Measurement Methods and Standards, Special Issue of Proc. IEEE, **55**(6), June, 1967.

Frequency Stability, Special Issue of Proc. IEEE, **54**(2), February, 1966.

REGULARLY PUBLISHED JOURNALS AND PROCEEDINGS

IEEE Transactions on Ultrasonics, Ferroelectrics and Frequency Control.

Proceedings of the IEEE Frequency Control Symposium (see discussion on the following page).

Proceedings of the Annual Precise Time and Time Interval (PTTI) Applications and Planning Meeting, available from the U.S. Naval Observatory, Time Service, 3450 Massachusetts Ave., N.W., Washington, D.C. 20392-5420, USA.

Proceedings of the European Frequency and Time Forum, available from EFTF Secretariat, FSRM, Rue de l'Orangerie 8, CH-2000, Neuchâtel, Switzerland.

Proceedings of the Conference on Precision Electromagnetic Measurements, published since 1962 in the IEEE Transactions on Instrumentation and Measurement.

SPECIAL CONFERENCES

Frequency Standards and Metrology: Proceedings of the Fourth Symposium, A. DeMarchi, ed. (Springer-Verlag, New York, 1989).

Third Symposium on Frequency Standards and Metrology, J. Physique, **42**, Colloque C-8, Supplement no. 12, 1981.

Proceedings of 17th Int. Symp. on Free Radicals, K.M. Evenson, ed., NBS Spec. Publ. 716, 1986.

IEEE FREQUENCY CONTROL SYMPOSIUM

The IEEE International Frequency Control Symposium is one of the more important conferences on time and frequency. It was previously known as the Annual Symposium on Frequency Control. The proceedings are available from two different sources and are listed below. Items listed with an IEEE Catalog Number are available from IEEE, 445 Hoes Lane, Piscataway, NJ 08854, USA. Tel: 800-678-4333 or 908-981-0060. Proceedings listed with Document Numbers are available from National Technical Information Service, 5285 Port Royal Road, Sills Building, Springfield, VA 22161, USA. Tel: 703-487-4650.

1994 IEEE Int. Freq. Control Symp. IEEE Catalogue No. 94CH3446-2 (1994).
1993 IEEE Int. Freq. Control Symp. IEEE Catalogue No. 93CH3244-1 (1993).
1992 IEEE Int. Freq. Control Symp. IEEE Catalogue No. 92CH3083-3 (1992).
45th Ann. Symp. Freq. Control IEEE Catalogue No. 91CH2965-2 (1991).
44th Ann. Symp. Freq. Control IEEE Catalogue No. 90CH2818-3 (1990).
43rd Ann. Symp. Freq. Control IEEE Catalogue No. 89CH2690-6 (1989).
42nd Ann. Symp. Freq. Control IEEE Catalogue No. 88CH2588-2 (1988).
41st Ann. Symp. Freq. Control IEEE Catalogue No. 87CH2427-3 (1987).
40th Ann. Symp. Freq. Control IEEE Catalogue No. 86CH2330-9 (1986).
39th Ann. Symp. Freq. Control IEEE Catalogue No. 85CH2186-5 (1985).
38th Ann. Symp. Freq. Control IEEE Catalogue No. 84CH2062-8 (1984).
37th Ann. Symp. Freq. Control Document No. AD-A136673 (1983).
36th Ann. Symp. Freq. Control Document No. AD-A130811 (1982).
35th Ann. Symp. Freq. Control Document No. AD-A110870 (1981).
34th Ann. Symp. Freq. Control Document No. AD-A213670 (1980).
33rd Ann. Symp. Freq. Control Document No. AD-A213544 (1979).
32nd Ann. Symp. Freq. Control Document No. AD-A955718 (1978).
31st Ann. Symp. Freq. Control Document No. AD-A088221 (1977).
30th Ann. Symp. Freq. Control Document No. AD-A046089 (1976).
29th Ann. Symp. Freq. Control Document No. AD-A017466 (1975).
28th Ann. Symp. Freq. Control Document No. AD-A011113 (1974).
27th Ann. Symp. Freq. Control Document No. AD-771042 (1973).
26th Ann. Symp. Freq. Control Document No. AD-771043 (1972).
25th Ann. Symp. Freq. Control Document No. AD-746211 (1971).
24th Ann. Symp. Freq. Control Document No. AD-746210 (1970).
23rd Ann. Symp. Freq. Control Document No. AD-746209 (1969).
22nd Ann. Symp. Freq. Control Document No. AD-844911 (1968).
21st Ann. Symp. Freq. Control Document No. AD-659792 (1967).
20th Ann. Symp. Freq. Control Document No. AD-800523 (1966).
19th Ann. Symp. Freq. Control Document No. AD-471229 (1965).
18th Ann. Symp. Freq. Control Document No. AD-450341 (1964).
17th Ann. Symp. Freq. Control Document No. AD-423381 (1963).
16th Ann. Symp. Freq. Control Document No. AD-285086 (1962).
15th Ann. Symp. Freq. Control Document No. AD-265455 (1961).
14th Ann. Symp. Freq. Control Document No. AD-246500 (1960).
13th Ann. Symp. Freq. Control Document No. AD-298325 (1959).
12th Ann. Symp. Freq. Control Document No. AD-298324 (1958).
11th Ann. Symp. Freq. Control Document No. AD-298323 (1957).
10th Ann. Symp. Freq. Control Document No. AD-298322 (1956).

ABBREVIATIONS OF NIST PUBLICATIONS

On August 23, 1988, the National Bureau of Standards (NBS) became the National Institute of Standards and Technology (NIST); therefore, documents with either prefix are considered NIST publications.

There are commonly used abbreviations for the names of the NIST journals that appear in this bibliography. They are listed below:

NISTIR - NIST Interagency/Internal Report
NIST TN - NIST Technical Note
NIST SP - NIST Special Publication
NIST HB - NIST Handbook
NIST JRES - NIST Journal of Research
NIST MN - NIST Monograph

NBSIR - NBS Interagency/Internal Report
NBS TN - NBS Technical Note
NBS SP - NBS Special Publication
NBS HB - NBS Handbook
NBS JRES - NBS Journal or Research
NBS MN - NBS Monograph

NIST (NBS) Technical Notes, Special Publications, Handbooks, Journals of Research, and Monographs may be purchased from the U.S. Government Printing Office at the following address: New Orders, Superintendent of Documents, P.O. Box 371954, Pittsburgh, PA 15250-7954. Orders may be payed by major credit card, NTIS Deposit Account, or check or money order payable in U.S. dollars to the Superintendent of Documents. The Government Printing Office usually only stocks these publications for a year or two, after which they may be purchased from the National Technical Information Service at the address listed below.

NIST (NBS) Interagency/Internal Reports (NISTIRs, NBSIRs) may be purchased from the National Technical Information Service, Springfield, VA 22161. Orders may be payed by major credit card, NTIS Deposit Account, or check or money order payable in U.S. dollars to NTIS.

PAPERS INCLUDED UNDER EACH TOPIC

BROADCAST SERVICES
Includes papers that relate to satellite, radio, telephone, and computer network dissemination of time and frequency signals.

CALIBRATION METHODS
Includes papers that relate to calibration methods and calibration services of NIST as well as measurement methods supporting calibration.

CESIUM FREQUENCY STANDARDS
Includes papers relating directly to cesium frequency standards and concepts that, while not specific to cesium standards, are often applied in their design and use.

DIODE LASERS
Includes papers relating to diode lasers, particularly line-narrowed and stabilized diode lasers, and their application to a wide range of measurement problems.

ELECTRONIC CONTROL SYSTEMS
Includes papers dealing with electronic components and systems designed for or useful in time-and-frequency systems.

FREQUENCY SYNTHESIS
Includes papers dealing with electronic and optical synthesis of signals using multiplication and division techniques.

GENERAL TIME AND FREQUENCY
Includes papers of a very general nature, often covering several time and frequency topics.

GEOPHYSICAL MEASUREMENTS
Includes papers on geophysical measurement systems developed in a peripheral program of the Division. Sometimes these systems are based on timing technology.

HYDROGEN MASERS
Includes papers on both active and passive hydrogen masers.

ION STORAGE RESEARCH
Includes papers on ion storage and radiative ion cooling as applied to the development of advanced frequency standards as well as a wide range of fundamental physical studies relating to stored ions.

LASERS
Includes papers dealing with laser design and construction, newly discovered spectral lines shown to lase, and special applications of high-performance lasers to metrology and spectroscopy.

LENGTH/SPEED OF LIGHT
Includes papers relating to earlier measurement of the speed of light, the redefinition of the meter in terms of the second, the development of stabilized lasers as wavelength/length standards, and accurate measurement of the frequencies of such lasers.

MEASUREMENT METHODS
Includes papers on methods for characterizing clocks, oscillators, and other electronic components as well as methods for spectroscopic measurement.

MISCELLANEOUS
Includes all those papers with material that is not consistent with the other categories.

OTHER FREQUENCY STANDARDS
Includes papers on other non-traditional frequency standards and stable frequency references such as the superconducting-cavity-stabilized oscillator, the ammonia frequency standard, and the thallium-beam frequency standard.

QUARTZ OSCILLATORS
Includes papers on the design and performance of quartz oscillators focussing especially on noise performance and sensitivity to environmental parameters.

RUBIDIUM FREQUENCY STANDARDS
Includes papers on passive rubidium-cell frequency standards.

SPECTROSCOPY
Includes papers dealing primarily with high-resolution, infrared and far-infrared spectroscopy of atoms and molecules using frequency-measurement rather than wavelength-measurement methods.

STATISTICAL STUDIES
Includes papers on statistical measures important in the characterization of clocks, oscillators, and time-transfer systems.

TIME/THE SECOND
Includes papers dealing with timekeeping and the measurement of time.

TIME COORDINATION
Includes papers relating to the coordination (using various time transfer methods) of widely separated standards with emphasis on accuracy levels needed for international time coordination.

TIME SCALES
Includes papers on physical time scales, measurement systems used in such time scales, and algorithms used for optimally combining the outputs of an ensemble of clocks into a time scale.

TUTORIALS
Includes time and frequency papers which are judged to be easy to read. These should provide a good starting point for introduction to the field or to some subtopic in the field.

TIME AND FREQUENCY:
Bibliography of NIST Publications

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This bibliography includes most NIST time and frequency publications dating from the development of the first atomic clock. The publications are sorted into 23 categories. While the majority of the publications cover topics that are central to time and frequency measurements and standards, the bibliography does include other peripheral publications of the Time and Frequency Division.

Key Words: atomic clock; atomic frequency standard; clock; frequency; frequency standard; ion storage; laser; laser frequency standard; primary frequency standard; time; time transfer spectroscopy

INTRODUCTION

This bibliography is meant to cover the modern era of time and frequency technology, that is, the era marked by the introduction of atomic timekeeping. The earliest publications included date from the late 1950s. The Time and Frequency Division was formed in September of 1967, and from that date forward a complete set of publications has been maintained. However, some of the earlier papers on atomic clocks have been added for completeness. We have not included papers that are not yet published, but have tried to include everything available up to the time of publication of this volume.

It is difficult to divide the papers into categories, because many of them cover several subjects. We have thus chosen to include many papers in more than one of the 23 categories which we have used. Most of these categories represent specific technical areas. Two categories, Tutorials and General Time and Frequency, have been added to bring together papers that were written for more general audiences or tutorial purposes. A Miscellaneous category is also included to pick up unusual papers that just wouldn't fit elsewhere.

Just following this page we cite a number of books, journals, and special issues of journals that cover this field. These are noted here as a resource to those new to the field. Obviously, important papers appear in other locations, but a large fraction of the papers will be found within this narrower list. Included in this list are addresses from which certain conference proceedings can be obtained.

Finally, we encourage readers to obtain needed copies of publications cited herein from local libraries or the addresses on the next two pages. We will try to help with copies of papers that are difficult to locate, but resource limitations make it impossible for us to provide reprints of all of these papers.

BROADCAST SERVICES

M.A. Lombardi, "How to Get NIST Traceable Time on Your Computer," Proc. National Conf. of Standards Laboratories (NCSL), Chicago, IL, July 31-Aug. 3, 1994, pp. 299-313.

J. Levine, "The NIST Internet Time Services," Proc. 25th Ann. PTTI Mtg., Marina Del Ray, CA, Nov. 29-Dec. 2, 1993, pp. 505-511.

J. Levine, "The Future of Time and Frequency Dissemination," Proc. 25th Ann. PTTI Mtg., Marina Del Ray, CA, Nov. 29-Dec. 2, 1993, pp. 573-578.

M.A. Lombardi, "Keeping Time on Your PC," BYTE Magazine, pp. 57-62, 1993.

R.E. Beehler, "The Role of the Consultative Committee on International Radio (CCIR) in Time and Frequency," Proc. 23rd Ann. PTTI Mtg., Pasadena, CA, Dec. 3-5, 1991, pp. 321-330.

R.E. Beehler and M.A. Lombardi, "NIST Time and Frequency Services," NBS SP 432 (Revised), 1991.

D.A. Howe and D.D. Davis, "A Direct Sequence Spread-Spectrum Modem Design for Time Transfers via Geostationary Satellites," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 13-15, 1991, pp. 89-95.

D.W. Allan, D.D. Davis, J. Levine, M.A. Weiss, N. Hironaka, and D. Okayama, "New Inexpensive Frequency Calibration Service from NIST," Proc. 44th Ann. Symp. Freq. Control Symp., Baltimore, MD, May 23-25, 1990, pp. 107-116.

G. Kamas and M.A. Lombardi, "Time and Frequency Users Manual," NBS SP 559 (Revised), 1990.

J. Levine, "Synchronizing Computer Clocks Using a Local Area Network," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 409-416.

J. Levine, M. Weiss, D.D. Davis, D.W. Allan, and D.B. Sullivan, "The NIST Digital Time Service," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 181-190.

D.B. Sullivan, "ACTS Sets Computer Time and Much More, Station-to-Station," Broadcast Engineering, pp. 112-116, 1989.

J. Levine, M. Weiss, D.D. Davis, D.W. Allan, and D.B. Sullivan, "The NIST Automated Computer Time Service," NIST JRES, vol. 94, pp. 311-321, 1989.

J.L. Jespersen and D.W. Hanson, "Some Sources of Timing for Communication Systems," Proc. 2nd European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1989, pp. 251.

R.E. Beehler, D.D. Davis, and J.B. Milton, "GOES Satellite Time Code Dissemination: Description and Operation," NBS SP 250-30, 1988.

R.E. Beehler and D.W. Allan, "Recent Trends in NBS Time and Frequency Distribution Services," Proc. IEEE, vol. 74, 1986, pp. 155-157.

D.W. Allan, "Frequency and Time Coordination, Comparison, and Dissemination," Precision Frequency Control, E.A. Gerber and A. Ballato, eds. (Academic Press), vol. 2, pp. 233-273, 1985.

R.E. Beehler, "GOES Satellite Time Code Dissemination," Proc. 14th Ann. PTTI Mtg., Greenbelt, MD, Nov. 30-Dec. 2, 1982, pp. 57-81.

R.E. Beehler, "Time/Frequency Services of the U.S. National Bureau of Standards and Some Alternatives for Future Improvement," J. Electron. Telecommun. Engineers, vol. 27, pp. 389-402, 1981.

D.W. Hanson, D.D. Davis, and J.V. Cateora, "NBS Time to the Western Hemisphere by Satellite," Radio Sci., vol. 14, pp. 731-740, 1979.

R.E. Beehler, D.D. Davis, J.V. Cateora, A.J. Clements, J.A. Barnes, and E. Mendez-Quinones, "Time Recovery Measurements Using Operational GOES and Transit Satellites," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 283-312.

J.L. Jespersen, G. Kamas, and M.A. Weiss, "Voice Announcements of Time: A New Approach," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 363-383.

J.V. Cateora, D.W. Hanson, and D.D. Davis, "Automatic Path Delay Corrections to GOES Satellite Time Broadcasts," NBS TN 1003, 1978.

D.W. Hanson, D.D. Davis, and J.V. Cateora, "Microprocessor-Based Satellite-Controlled Clock," Proc. NBS-IEEE Microcomputer Based Instrumentation Conf., 1978, pp. 83-86.

S.L. Howe, ed., "NBS Time via Satellites," NBS Publication TFS-602, 1978.

H. Hellwig, "Precise Time and Frequency," Phys. Technology, vol. 9, pp. 266-267, 1978.

D.W. Hanson, D.D. Davis, and J.V. Cateora, "Time From NBS By Satellite," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1977, pp. 139-150.

D.W. Hanson, J.V. Cateora, and D.D. Davis, "A Time Code from NOAA's Geostationary Operational Environmental Satellites," Proc. 8th Ann. PTTI Mtg., Washington, DC, Nov. 20-Dec. 2, 1976, pp. 105-124.

R.L. Easton, L.C. Fisher, D.W. Hanson, H. Hellwig, and L.J. Rueger, "Dissemination of Time and Frequency by Satellite," Proc. IEEE, vol. 64, 1976, pp. 1482-1493.

J.V. Cateora, D.D. Davis, and D.W. Hanson, "A Satellite-Controlled Digital Clock," NBS TN 681, 1976.

A.S. Risley, "The National Measurement System for Time and Frequency," NBS SP 445-1, 1976.

D.D. Davis, "A Microprocessor Data Logging System for Utilizing TV as a Time-Frequency Transfer Standard," Proc. 8th Ann. PTTI Mtg., Washington, DC, Nov. 20-Dec. 2, 1976, pp. 167-181.

J.A. Barnes and R.E. Beehler, "Report on the 1975 Survey of Users of the Services of Radio Stations WWV and WWVH," NBS TN 674, 1975.

N. Hironaka and C. Trembath, "The Use of National Bureau of Standards High Frequency Broadcasts for Time and Frequency Calibrations," NBS TN 668, 1975.

D.D. Davis, "Calibrating Crystal Oscillators with TV Color-Reference Signals," Electronics, vol. 48, pp. 107-112, 1975.

D.W. Hanson and W.F. Hamilton, "Satellite Broadcasting of WWV Signals," IEEE Trans. Aerospace Electron. Syst., vol. 10, pp. 1-2, 1974.

J.B. Milton, "Standard Time and Frequency: Its Generation, Control, and Dissemination by the National Bureau of Standards," NBS TN 656, 1974.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

D.A. Howe, "The Feasibility of Applying the Active TvTime System to Automatic Vehicle Location," J. Instit. Navigation, vol. 21, pp. 9-15, 1974.

D.A. Howe, "Precise Frequency Dissemination Using the 19-kHz Pilot Tone on Stereo FM Radio Stations," IEEE Trans. Broadcasting, vol. 20, pp. 17-20, 1974.

J.B. Milton and W.F. Hamilton, "An Engineering Feasibility Study for One-Way Time Transfer Using the GOES Satellite Ranging System," NBSIR 73-348, pp. 1-34, 1973.

S.L. Danielson and D.A. Howe, "Use of the Television Vertical Interval to Broadcast Time for Everyone and Program Captions for the Deaf," Communications Society, vol. 11, pp. 3-6, 1973.

D.W. Hanson and W.F. Hamilton, "Time and Frequency Broadcast Experiments from the ATS-3 Satellite," NBS TN 645, 1973.

J.T. Stanley, "The Uses and Limitations of HF Standard Broadcasts for Time and Frequency Comparison," Proc. 4th Ann. PTTI Mtg., Greenbelt, MD, Nov. 14-16, 1972, pp. 249-258.

D.W. Allan, J.E. Gray, and H.E. Machlan, "The National Bureau of Standards Atomic Time Scales: Generation, Dissemination, Stability, and Accuracy," IEEE Trans. Instrum. Meas., vol. 21, pp. 388-391, 1972.

D.A. Howe, "Nationwide Precise Time and Frequency Distribution Utilizing an Active Code Within Network Television Broadcasts," IEEE Trans. Instrum. Meas., vol. 21, pp. 263-276, 1972.

J.B. Milton, "Standard Time and Frequency: Its Generation, Control, and Dissemination from the National Bureau of Standards Time and Frequency Division," NBS TN 379-1, 1972.

L. Fey, "A Time Code for the Omega Worldwide Navigation System," Proc. IEEE, vol. 60, 1972, pp. 630.

D.A. Howe, "Results of Active Line-1 TV Timing," Proc. IEEE, vol. 60, 1972, pp. 634-637.

J.L. Jespersen, B.E. Blair, and L.E. Gatterer, "Characterization and Concepts of Time-Frequency Dissemination," Proc. IEEE, 1972, pp. 502-519.

W.F. Hamilton and J.L. Jespersen, "Application of VLF Theory to Time Dissemination," NBS TN 610, 1971.

R.E. Beehler, "Spaceborne Clock System: Some Alternatives for a Proposed NASA Experiment," NBS Report 10 735, pp. 1-87, 1971.

D.W. Hanson and W.F. Hamilton, "One-Way Time Synchronization via Geostationary Satellites at UHF," IEEE Trans. Instrum. Meas., vol. 20, pp. 147-153, 1971.

D.D. Davis, B.E. Blair, and J.F. Barnaba, "Long-Term Continental U.S. Timing System via Television Networks," IEEE Spectrum, vol. 8, pp. 41-52, 1971.

L. Fey, "New Signals from an Old Timer...WWV," Broadcast Engineering, pp. 44-46, 1971.

D.D. Davis, "Frequency Standard Hides in Every Color TV Set," Electronics, pp. 96-98, 1971.

L. Fey, "Time Dissemination Capabilities of the Omega System," Proc. 25th Ann. Symp. Freq. Control, Fort. Monmouth, NJ, June 6-8, 1971, pp. 167-170.

D.W. Hanson and W.F. Hamilton, "Clock Synchronization from Satellite Tracking," IEEE Trans. Aerospace Electron. Syst., vol. 7, pp. 895-899, 1971.

J.L. Jespersen, L.E. Gatterer, D.W. Hanson, and W.F. Hamilton, "16 D — Artificial Satellites as a Mean of Time Dissemination," L'Espace et la Communication, vol. 1, pp. 426-433, 1971.

D.W. Hanson, W.F. Hamilton, and L.E. Gatterer, "The NBS Frequency and Time Satellite Experiment Using ATS-3," Proc. 3rd Ann. PTTI Mtg., Washington, DC, Nov. 16-18, 1971, pp. 155-159.

D.W. Allan and J.A. Barnes, "Some Statistical Properties of LF and VLF Propagation," Proc. 13th AGARD Symp., 1970, pp. 219-230.

D.D. Davis, J.L. Jespersen, and G. Kamas, "The Use of Television Signals for Time and Frequency Dissemination," Proc. IEEE, vol. 58, 1970, pp. 931-933.

D.D. Davis, J.L. Jespersen, and G. Kamas, "Time Dissemination and Clock Synchronization via Television," NBS Tech. News Bulletin, pp. 125-126, 1970.

J.B. Milton, "WWVB/WWVL Field Studies," NBS Report 9725, pp. 1-220, 1969.

J.L. Jespersen, G. Kamas, and A.H. Morgan, "A Proposed Ranging System with Application to VLF Timing," IEEE Trans. Instrum. Meas., vol. 16, pp. 282-285, 1967.

J.L. Jespersen, "Signal Design for Time Dissemination: Some Aspects," NBS TN 357, 1967.

J.L. Jespersen, G. Kamas, and A.H. Morgan, "VLF Propagation Over Distances Between 200 and 1500 Km," M.F., L.F., and V.L.F. Radio Propagation Conf. Publication No. 36, pp. 74-80, 1967.

Y. Beers, "WWV Moves to Colorado," QST, pp. 11-35, 1967.

G. Kamas, A.H. Morgan, and J.L. Jespersen, "New Measurements of Phase Velocity at VLF," Radio Sci., vol. 1, pp. 1409-1410, 1966.

J.M. Richardson and J.F. Brockman, "Atomic Standards of Frequency and Time," Phys. Teach., vol. 4, pp. 247-256, 1966.

J.A. Barnes, D.H. Andrews, and D.W. Allan, "The NBS-A Time Scale—Its Generation and Dissemination," IEEE Trans. Instrum. Meas., vol. 14, pp. 228-232, 1965.

G. Hudson, "Of Time and the Atom...," Phys. Today, pp. 34-38, 1965.

R.L. Fey, J.B. Milton, and A.H. Morgan, "Remote Phase Control of Radio Station WWVL," Nature, vol. 193, pp. 1063-1064, 1962.

CALIBRATION METHODS

D.W. Allan and M.A. Weiss, "The Variance of Predictability of Hydrogen Masers and of Primary Cesium Standards in Support of a Real Time Prediction of UTC," Proc. 8th European Freq. and Time Forum, Weihenstephan, Germany, Mar. 9-11, 1994, pp. 1049-1066.

F.L. Walls, R. Barillet, R. Besson, J. Groslambert, P. Schumacher, J. Rufenacht, and K. Hilty, "International Comparison of Phase Noise," Proc. 8th European Freq. and Time Forum, Weihenstephan, Germany, Mar. 9-11, 1994, pp. 439-456.

M.A. Weiss and F.L. Walls, "Preliminary Evaluation of Time Scales Based on Hydrogen Masers," Proc. 8th European Freq. and Time Forum, Weihenstephan, Germany, Mar. 9-11, 1994, pp. 417-428.

A. Lepek and F.L. Walls, "Cross Correlation Analysis Improves Time-Domain Measurements," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 312-320.

F.L. Walls, "Reducing Errors, Complexity, and Measurement Time for PM Noise Measurements," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 289-297.

F.L. Walls, "Secondary Standard for PM and AM Noise at 5, 10, and 100 MHz," IEEE Trans. Instrum. Meas., vol. 42, pp. 136-143, 1993.

M.A. Weiss and T. Weissert, "Sifting Through Nine Years of NIST Clock Data with TA2," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 199-210.

F.L. Walls, "Practical Standards for PM and AM Noise at 5, 10, and 100 MHz," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 189-198.

M.A. Weiss, D.W. Allan, D.D. Davis, and J. Levine, "Smart Clock: A New Time," IEEE Trans. Instrum. Meas., vol. 41, pp. 915-918, 1992.

M. Lombardi, "Using LORAN-C Broadcasts for Automated Frequency Calibrations," Proc. 1992 National Conf. of Standards Laboratories (NCSL), Washington, DC, Aug. 2-6, 1992, pp. 361-373.

M. Lombardi, "Laboratory Automation: The Design Philosophy of the NIST Frequency Measurement Service," Proc. National Conf. of Standards Laboratories, Albuquerque, NM, Aug. 18-22, 1991, pp. 277-287.

F.L. Walls, A.J.D. Clements, C.M. Felton, and T.D. Martin, "Precision Phase Noise Metrology," Proc. National Conf. of Standards Laboratories (NCSL), Albuquerque, NM, Aug., 1991, pp. 257-275.

D.W. Allan, "Time and Frequency Metrology: Current Status and Future Considerations," Proc. 5th European Freq. and Time Forum, Bescanson, France, Mar. 13-15, 1991, pp. 1-9.

M.A. Weiss and T. Weissert, "Promise into Practice: Implementing TA2 on Real Clocks at NIST," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 442-448.

M. Weiss and T. Weissert, "AT2, A New Time Scale Algorithm: AT1 Plus Frequency Variance," Metrologia, vol. 28, pp. 65-74, 1991.

F.L. Walls, "Method and Apparatus for Wide Band Phase Modulation," United States Patent 4,968,908, 1990.

G. Kamas and M.A. Lombardi, "Time and Frequency Users Manual," NBS SP 559 (Revised), 1990.

M.A. Weiss and T. Weissert, "A New Time Scale Algorithm AT1 Plus Frequency Variance," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 343-355.

M.A. Weiss, D.W. Allan, and T.K. Peppler, "A Study of the NBS Time Scale Algorithm," IEEE Trans. Instrum. Meas., vol. 38, pp. 631-635, 1989.

D.W. Allan, M.A. Weiss, and T.K. Peppler, "In Search of the Best Clock," IEEE Trans. Instrum. Meas., vol. 38, pp. 624-630, 1989.

D.W. Allan, "In Search of the Best Clock—An Update," Proc. 4th Symp. on Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, pp. 29-36.

D.W. Allan, "Report from Turin, The Third International Atomic Time Scale Algorithm Symp.," Proc. 20th Ann. PTTI Mtg., Redondo Beach, CA, Nov. 29-Dec. 1, 1988, pp. 237-250.

F.L. Walls, A.J.D. Clements, C.M. Felton, M.A. Lombardi, and M.D. Vanek, "Extending the Range and Accuracy of Phase Noise Measurements," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 432-441.

D.W. Allan and T.K. Peppler, "Ensemble Time and Frequency Stability of GPS Satellite Clocks," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 465-467.

A. Shenhar, W. Litman, A. Lepek, A. Chitrinovitch, D.W. Allan, and T.K. Peppler, "Israel's New Synchronized Time Scale, UTC(INPL)," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 485-489.

J. Levine and D.W. Allan, "The Steering of a Real Time Clock to UTC(NBS) and to UTC," Proc. 3rd Int. Time Scale Algorithm Symp., Turin, Italy, Sept. 12-13, 1988, pp. 239-254.

D.W. Allan, "Notes on Variance Testing of Time Scale Algorithms and Clock Sets," Proc. 3rd Int. Time Scale Algorithm Symp., Turin, Italy, Sept. 12-13, 1988, pp. 361-363.

G. Kamas and M.A. Lombardi, "Traceable Frequency Calibrations: How to Use the NBS Frequency Measurement System in the Calibration Lab," NBS SP 250-29, 1988.

F. Varnum, D.R. Brown, D.W. Allan, and T.K. Peppler, "Comparison of Time Scales Generated with the NBS Ensembling Algorithm," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 13-22.

D.W. Allan, "A Study of Long-Term Stability of Atomic Clocks," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 375-379.

F.L. Walls, "Precise Phase Noise Measurements of Oscillators," Proc. 8th Quartz Devices Conf. and Exhibition, Kansas City, MO, Aug. 26-28, 1986, pp. 143-158.

W.J. Klepczynski, H.F. Fliegel, and D.W. Allan, "GPS Time Steering," Proc. 18th Ann. PTTI Mtg., Washington, DC, Dec. 2-4, 1986, pp. 237-249.

S.R. Stein, G. Kamas, and D.W. Allan, "New Time and Frequency Services at the National Bureau of Standards," Proc. 15th Ann. PTTI Mtg., Washington, DC, Dec. 6-8, 1983, pp. 17-27.

G. Kamas and J.L. Jespersen, "New Frequency Calibration Service Offered by the National Bureau of Standards," Proc. 37th Ann. Symp. Freq. Control, Philadelphia, PA, June 1-3, 1983, pp. 506-516.

R. H. Jones and P. V. Tryon, "Estimating Time from Atomic Clocks," J. Res., vol. 83, pp. 17-24, 1983.

J.E. Gray, "Clock Synchronization and Comparison: Problems, Techniques and Hardware," NBS TN 691, 1976.

A.S. Risley, "The National Measurement System for Time and Frequency," NBS SP 445-1, 1976.

D.W. Allan and F.H. Brzoticky, "Calibration of Police Radar Instruments," Reprinted from NBS SP 442, Rpt. 60th Nat. Conf. Weights and Measures, pp. 42-47, 1976.

D.D. Davis, "A Microprocessor Data Logging System for Utilizing TV as a Time-Frequency Transfer Standard," Proc. 8th Ann. PTTI Mtg., Washington, DC, Nov. 20-Dec. 2, 1976, pp. 167-181.

H. Hellwig, D.W. Allan, and F.L. Walls, "Time and Frequency," Proc. 5th Int. Conf. on Atomic Masses and Fundamental Constants (AMCO-5), Paris, France, June 2-6, 1975, in Atomic Masses and Fundamental Constants, J.H. Sanders, ed. (Plenum Press), vol. 5, 1975, pp. 305-311.

D.W. Allan, "Picosecond Time Difference Measurement System," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 404-411.

D.D. Davis, "Calibrating Crystal Oscillators with TV Color-Reference Signals," Electronics, vol. 48, pp. 107-112, 1975.

D.W. Allan, H. Hellwig, and D.J. Glaze, "An Accuracy Algorithm for an Atomic Time Scale," Metrologia, vol. 11, pp. 133-138, 1975.

D.W. Allan, J.E. Gray, and H.E. Machlan, "The National Bureau of Standards Atomic Time Scale: Generation, Stability, Accuracy and Accessibility," NBS MN 140, Time and Frequency: Theory and Fundamentals, pp. 205-231, 1974.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

J.A. Barnes and G.M.R. Winkler, "The Standards of Time and Frequency in the U.S.A.," NBS TN 649, 1974.

W. Ganter, "Modeling of Atomic Clock Performance and Detection of Abnormal Clock Behavior," NBS TN 636, 1973.

D.W. Allan, D.J. Glaze, H.E. Machlan, A.E. Wainwright, H. Hellwig, J.A. Barnes, and J.E. Gray, "Performance, Modeling, and Simulation of Some Cesium Beam Clocks," Proc. 27th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 12-14, 1973, pp. 334-346.

K. Yoshimura, "The Generation of an Accurate and Uniform Time Scale With Calibrations and Prediction," NBS TN 626, 1972.

D.W. Allan, J.E. Gray, and H.E. Machlan, "The National Bureau of Standards Atomic Time Scales: Generation, Dissemination, Stability, and Accuracy," IEEE Trans. Instrum. Meas., vol. 21, pp. 388-391, 1972.

J.L. Jespersen and L. Fey, "Time-Telling Techniques," IEEE Spectrum, vol. 9, pp. 51-58, 1972.

J.A. Barnes, "The Basic Concepts and Management within the U.S.A. of Precise Time and Frequency," NBS Report 10 726, 1972.

D.D. Davis, "Frequency Standard Hides in Every Color TV Set," Electronics, pp. 96-98, 1971.

J.A. Barnes, "A Non-Mathematical Discussion of Some Basic Concepts of Precise Time Measurement," in On Frequency (Tracor Publishing, Inc.), vol. II, pp. 1-5, 1971.

D.W. Allan and J.E. Gray, "Comments on the October 1970 Metrologia Paper "The U.S. Naval Observatory Clock Time Reference and the Performance of a Sample of Atomic Clocks,"" Int. J. Sci. Metrology, vol. 7, pp. 79-82, 1971.

D.W. Allan, "Statistical Modeling and Filtering For Optimum Atomic Time Scale Generation," Proc. Freq. Stand. and Metrology Sem., Quebec, Canada, 1971, pp. 388-410.

D.W. Allan, L. Fey, H.E. Machlan, and J.A. Barnes, "An Ultra-Precise Time Synchronization System Designed by Computer Simulation," Frequency, pp. 1-5, 1968.

J.A. Barnes and D.W. Allan, "An Approach to the Prediction of Coordinated Universal Time," Frequency, vol. 5, pp. 3-8, 1967.

G.E. Hudson, "Some Characteristics of Commonly Used Time Scales," Proc. IEEE, vol. 55, 1967, pp. 815-821.

J.A. Barnes, "The Development of an International Atomic Time Scale," Proc. IEEE, vol. 55, 1967, pp. 822-826.

R. Vessot, H. Peters, J. Vanier, R. Beehler, D. Halford, R. Harrach, D. Allan, D. Glaze, C. Snider, J. Barnes, L. Culter, and L. Bodily, "An Intercomparison of Hydrogen and Cesium Frequency Standards," IEEE Trans. Instrum. Meas., vol. 15, pp. 165-176, 1966.

L. Fey, J.A. Barnes, and D.W. Allan, "An Analysis of a Low Information Rate Time Control Unit," Proc. 20th Ann. Symp. Freq. Control, Monmouth, NJ, Apr. 19-21, 1966, pp. 629-635.

J.A. Barnes, D.H. Andrews, and D.W. Allan, "The NBS-A Time Scale—Its Generation and Dissemination," IEEE Trans. Instrum. Meas., vol. 14, pp. 228-232, 1965.

J. Newman, L. Fey, and W.R. Atkinson, "A Comparison of Two Independent Atomic Time Scales," Proc. IEEE, vol. 51, 1963.

P.H. Handel and F.L. Walls, "Analysis of Quantum 1/F Effects in Frequency Standards," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 539-540.

J.P. Lowe, W.D. Lee, F.L. Walls, and R.E. Drullinger, "A Hybrid Digital/Analog Servo for the NIST-7 Frequency Standard," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 662-665.

W.D. Lee, J.H. Shirley, and R.E. Drullinger, "Velocity Distributions of Atomic Beams by Gated Optical Pumping," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 658-661.

W.D. Lee, J.P. Lowe, J.H. Shirley, and R.E. Drullinger, "Microwave Leakage as a Source of Systematic Error and Long-Term Instability in Cesium Atomic Beam Frequency Standards," Proc. 8th European Freq. and Time Forum, Weihenstephan, Germany, Mar. 9-11, 1994, pp. 513-516.

R.W. Fox, S.L. Gilbert, L. Hollberg, J.H. Marquardt, and H.G. Robinson, "Optical Probing of Cold Trapped Atoms," Opt. Lett., vol. 18, pp. 1456-1458, 1993.

W.M. Itano and N.F. Ramsey, "The Accurate Measurement of Time," Sci. Am., vol. 269, pp. 56-65, 1993.

R.E. Drullinger, J.P. Lowe, D.J. Glaze, and J. Shirley, "NIST-7, The New US Primary Frequency Standard," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 71-74.

R.E. Drullinger, J.H. Shirley, J.L. Lowe, and D.J. Glaze, "An Error Analysis of the NIST Optically Pumped Primary Frequency Standard," IEEE Trans. Instrum. Meas., vol. 42, pp. 453-456, 1993.

R.E. Drullinger, J.P. Lowe, D.J. Glaze, and J. Shirley, "NIST-7, The New US Primary Frequency Standard," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 549-551.

R.E. Drullinger, D.J. Glaze, J.P. Lowe, and J.H. Shirley, "The NIST Optically Pumped Cesium Frequency Standard," IEEE Trans. Instrum. Meas., vol. 40, pp. 162-164, 1991.

R.E. Drullinger, J.H. Shirley, D.J. Glaze, J. Lowe, H.-S. Lee, and A.S. Zibrov, "Preliminary Investigations with the NIST Optically Pumped Primary Frequency Standard," Proc. 5th Annual European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 412-414.

A. DeMarchi, R.E. Drullinger, and J.H. Shirley, "Interference Fringes from Single-Cavity Excitation of an Atomic Beam," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 34-38.

R.E. Drullinger, "Optically Pumped Primary Frequency Standards," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 76-81.

J.H. Shirley, "Velocity Distributions from the Fourier Transforms of Ramsey Line Shapes," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 162-167.

R. Drullinger, L. Hollberg, S. Ohshima, Y. Ikegami, and Y. Koga, "Characteristics of an Optically Pumped Cs Frequency Standard at the NRLM," IEEE Trans. Instrum. Meas., vol. 38, pp. 533-536, 1989.

S. Ohshima, Y. Koga, Y. Nakadan, L. Hollberg, and R. Drullinger, "The Effect of Laser Line-Narrowing on the Performance of Optically Pumped Cesium Atomic Beam Frequency Standards," Proc. 2nd European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1989, pp. 531-532.

R.E. Drullinger, J.H. Shirley, D.J. Glaze, and L. Hollberg, "An Optically Pumped Primary Frequency Standard," Proc. 4th Symp. on Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, A. DeMarchi, ed. (Springer Verlag), pp. 116-119.

J.E. Gray, H.E. Machlan, and D.W. Allan, "The Effect of Humidity on Commercial Cesium Beam Atomic Clocks," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 514-518.

A. DeMarchi, J. Shirley, D.J. Glaze, and R.E. Drullinger, "A New Cavity Configuration for Cesium Beam Primary Frequency Standards," IEEE Trans. Instrum. Meas., vol. 37, pp. 185-190, 1988.

A. DeMarchi and R.E. Drullinger, "Long-Term Behaviour of Cavity Phase Difference in NBS-6," Metrologia, vol. 24, pp. 23-25, 1987.

R.E. Drullinger, J. Shirley, D.J. Glaze, L.W. Hollberg, and A. DeMarchi, "Progress Toward an Optically Pumped Cesium Beam Frequency Standard," Proc. 40th Ann. Symp. Freq. Control, Philadelphia, PA, May 28-30, 1986, pp. 428-431.

R.E. Drullinger, "Frequency Standards Based on Optically Pumped Cesium," Proc. IEEE, vol. 74, 1986, pp. 140-142.

R.E. Dullinger, D.J. Glaze, and D.B. Sullivan, "A Recirculating Oven for Atomic Beam Frequency Standards," Proc. 39th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-31, 1985, pp. 13-17.

A. DeMarchi, G.D. Rovera, R.E. Drullinger, and D.A. Howe, "A Beam Reversal Experiment on NBS-6 Primary Cs Standard Including Rabi Pulling Evaluation," Proc. 39th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-31, 1985, pp. 3-7.

J. Shirley, "Fluorescent Light Shift in Optically Pumped Cesium Standards," Proc. 39th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-31, 1985, pp. 22-23.

A. Derbyshire, R.E. Drullinger, M. Feldman, D.J. Glaze, D. Hilliard, D.A. Howe, L.L. Lewis, and J.H. Shirley, "Optically Pumped Small Cesium Beam Standards; A Status Report," Proc. 39th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-30, 1985, pp. 18-21.

L.L. Lewis, F.L. Walls, and D.A. Howe, "Prospects for Cesium Primary Standards at the National Bureau of Standards," Precision Measurement and Fundamental Constants II, B.N. Taylor and W.D. Phillips, eds., NBS SP 617, 1984.

L. Lewis, "Limitations of Atomic Beam Frequency Standards," Proc. Workshop on Spectroscopic Applications of Slow Atomic Beams; NBS SP 653, 1983.

W.M. Itano, L.L. Lewis, and D.J. Wineland, "Shift of $^2S_{1/2}$ Hyperfine Splittings Due to Blackbody Radiation," Phys. Rev. A, vol. 25, pp. 1233-1235, 1982.

L.L. Lewis, F.L. Walls, and D.J. Glaze, "Design Considerations and Performance of NBS-6, The NBS Primary Frequency Standard," J. Phys. (Paris), vol. Colloque C8, pp. 241-246, 1981.

L.L. Lewis, M. Feldman, and J.C. Bergquist, "Impact of Lasers on Primary Frequency Standards and Precision Spectroscopy," J. Phys. (Paris), vol. Colloque C8, pp. 271-281, 1981.

W.M. Itano, L.L. Lewis, and D.J. Wineland, "Shift of $^2S_{1/2}$ Hyperfine Splittings Due to Blackbody Radiation and Its Influence on Frequency Standards," J. Phys. (Paris), vol. Colloque C8, pp. 283-287, 1981.

L.L. Lewis and M. Feldman, "Optical Pumping by Lasers in Atomic Frequency Standards," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. 612-624.

F.L. Walls, "Prospects for Advances in Microwave Atomic Frequency Standards," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 619-640.

D.J. Wineland, "Limitations on Long-Term Stability and Accuracy in Atomic Clocks," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 81-110.

H. Hellwig, K.M. Evenson, and D.J. Wineland, "Time, Frequency and Physical Measurement," Phys. Today, pp. 23-30, 1978.

R.M. Garvey, H. Hellwig, S. Jarvis, Jr., and D.J. Wineland, "Two-Frequency Separated Oscillating Fields Technique for Atomic and Molecular Beam Spectroscopy," IEEE Trans. Instrum. Meas., vol. 27, pp. 349-354, 1978.

D.J. Wineland, S. Jarvis, Jr., H. Hellwig, and R.M. Garvey, "A New Method to Eliminate Cavity Phase Shift in Cesium Beam Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 571-577.

D.W. Allan, R.J. Besson, G. Busca, R.M. Garvey, H. Hellwig, D.A. Howe, S. Jarvis, A. Risley, S.R. Stein, F.L. Walls, and D.J. Wineland, "Some Recent Progress in Microwave Frequency and Time Standards at the National Bureau of Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 343-352.

D.W. Allan, H. Hellwig, S. Jarvis, Jr., D.A. Howe, and R. M. Garvey, "Some Causes and Cures of Frequency Instabilities (Drift and Noise) in Cesium Beam Frequency Standards," Proc. 31st Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 1-3, 1977, pp. 555-573.

H. Hellwig, "Frequency Standards and Clocks: A Tutorial Introduction," NBS TN 616 (2nd revised edition), 1977.

D.J. Wineland and H. Hellwig, "Comment on "The Millman Effect in Cesium Beam Atomic Frequency Standards,"" Metrologia, vol. 13, pp. 173-174, 1977.

D.J. Wineland, "The Cesium Beam Frequency Standard—Prospects for the Future," Metrologia, vol. 13, pp. 121-123, 1977.

H. Hellwig, "Design Principles and Characteristics of Frequency and Time Standards," IEEE Trans. Nucl. Sci., vol. 23, pp. 1629-1635, 1976.

D.J. Wineland, D.W. Allan, D.J. Glaze, H. Hellwig, and S. Jarvis, Jr., "Results on Limitations in Primary Cesium Standard Operation," IEEE Trans. Instrum. Meas., vol. 25, pp. 453-458, 1976.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

H. Hellwig, P. Tomingas, and S. Werthman, eds., "Copper Mountain Conf.," Proc. 2nd Freq. Stand. and Metrology Symp., Copper Mountain, CO, July 5-7, 1976, pp. 1-698.

D.A. Howe, "Velocity Distribution Measurements of Cesium Beam Tubes," Proc. 30th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 2-4, 1976, pp. 451-456.

H. Hellwig, D.W. Allan, S. Jarvis, Jr., and D.J. Glaze, "The Realization of the Second," Proc. 5th Int. Conf. on Atomic Masses and Fundamental Constants (AMCO-5), Paris, France, June 2-6, 1976, in Atomic Masses and Fundamental Constants, vol. 5, J.H. Sanders, ed. (Plenum Press), pp. 330-336.

D.W. Allan, H. Hellwig, and D.J. Glaze, "An Accuracy Algorithm for an Atomic Time Scale," Metrologia, vol. 11, pp. 133-138, 1975.

H. Hellwig, "A Review of Precision Oscillators," NBS TN 662, 1975.

H. Hellwig, "Atomic Frequency Standards: A Survey," Proc. IEEE, vol. 63, 1975, pp. 212-229.

S. Jarvis, Jr., "Molecular Beam Tube Frequency Biases Due to Distributed Cavity Phase Variations," NBS TN 660, 1975.

D.J. Glaze, H. Hellwig, D.W. Allan, S. Jarvis, Jr., and A.E. Wainwright, "Accuracy Evaluation and Stability of the NBS Primary Frequency Standards," IEEE Trans. Instrum. Meas., vol. 23, pp. 489-501, 1974.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

S. Jarvis, Jr., "Determination of Velocity Distributions in Molecular Beam Frequency Standards from Measured Resonance Curves," Metrologia, vol. 10, pp. 87-98, 1974.

H. Hellwig, H.E. Bell, J.C. Bergquist, D.J. Glaze, D.A. Howe, S. Jarvis, Jr., A.E. Wainwright, and F.L. Walls, "Results in Operation, Research and Development of Atomic Clocks at the National Bureau of Standards," Proc. Int. Congress of Chronometry (CIC), 1974, pp. 1-13.

D.A. Howe, H.E. Bell, H. Hellwig, and A. DeMarchi, "Preliminary Research and Development of the Cesium Tube Accuracy Evaluation System," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 362-372.

H. Hellwig, "Status Report on Primary Frequency Standards," NBS TN 646, 1973.

D.W. Allan, D.J. Glaze, H.E. Machlan, A.E. Wainwright, H. Hellwig, J.A. Barnes, and J.E. Gray, "Performance, Modeling, and Simulation of Some Cesium Beam Clocks," Proc. 27th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 12-14, 1973, pp. 334-346.

D.J. Glaze, H. Hellwig, S. Jarvis, Jr., A.E. Wainwright, and D.W. Allan, "Recent Progress On The NBS Primary Frequency Standard," Proc. 27th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 12-14, 1973, pp. 347-356.

H. Hellwig, S. Jarvis, Jr., D.J. Glaze, D. Halford, and H. E. Bell, "Time Domain Velocity Selection Modulation As A Tool To Evaluate Cesium Beam Tubes," Proc. 27th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 12-14, 1973, pp. 357-366.

H. Hellwig, S. Jarvis, Jr., D. Halford, and H.E. Bell, "Evaluation and Operation of Atomic Beam Tube Frequency Standards Using Time Domain Velocity Selection Modulation," Metrologia, vol. 9, pp. 107-112, 1973.

H. Helwig, J.A. Barnes, D.J. Glaze, and P. Kartaschoff, "Frequency Shifts Due to Ramsey Type Interrogation in Atomic Beam Tubes," NBS TN 612, 1972.

A.S. Risley, "The Physical Basis of Atomic Frequency Standards," NBS TN 399, 1971.

H. Hellwig, J.A. Barnes, and D.J. Glaze, "Frequency Biases in a Beam Tube Caused By Ramsey Excitation Phase Differences," Proc. 25th Ann. Symp. Freq. Control, Ft. Monmouth, NJ, June 6-8, 1971, pp. 309-312.

R.E. Beehler, "Cesium Atomic Beam Frequency Standards: A Survey of Laboratory Standards Development From 1949-1971," Proc. 25th Ann. Symp. Freq. Control, Ft. Monmouth, NJ, June 6-8, 1971, pp. 297-303.

H. Hellwig, R.C. Vessot, M.W. Levine, P.W. Zitzewitz, D.W. Allan and D.J. Glaze, "Measurement of the Unperturbed Hydrogen Hyperfine Transition Frequency," IEEE Trans. Instrum. Meas., vol. 19, pp. 200-209, 1970.

H. Hellwig, "Areas of Promise for the Development of Future Primary Frequency Standards," Int. J. Sci. Metrology, vol. 6, pp. 118-126, 1970.

J.A. Barnes, "Frequency Measurement Errors of Passive Resonators Caused by Frequency-Modulated Exciting Signals," IEEE Trans. Instrum. Meas., vol. 19, pp. 148-152, 1970.

D.J.Glaze, "Improvements in Atomic Cesium Beam Frequency Standards at the National Bureau of Standards," IEEE Trans. Instrum. Meas., vol. 19, pp. 156-160, 1970.

J.H. Shirley, "Effect of a Sinusoidal Excitation Amplitude on the Performance of an Atomic-Beam Spectrometer," Phys. Rev., vol. 160, pp. 95-99, 1967.

R.E. Beehler, "A Historical Review of Atomic Frequency Standards," Proc. IEEE, vol. 55, 1967, pp. 792-805.

R.J. Harrach, "Radiation-Field-Dependent Frequency Shifts of Atomic Beam Resonances," J. Appl. Phys., vol. 38, pp. 1808-1819, 1967.

R. Vessot, H. Peters, J. Vanier, R. Beehler, D. Halford, R. Harrach, D. Allan, D. Glaze, C. Snider, J. Barnes, L. Culter, and L. Bodily, "An Intercomparison of Hydrogen and Cesium Frequency Standards," IEEE Trans. Instrum. Meas., vol. 15, pp. 165-176, 1966.

R.J. Harrach, "Some Accuracy Limiting Effects in an Atomic Beam Frequency Standard," Proc. 20th Ann. Symp. Freq. Control, Fort. Monmouth, NJ, Apr. 19-21, 1966, pp. 424-435.

R. Beehler, D. Halford, R. Harrach, D. Allan, D. Glaze, C. Snider, J. Barnes, R. Vessot, H. Peters, J. Vanier, L. Cutler, and L. Bodily, "An Intercomparison of Atomic Standards," Proc. IEEE, vol. 54, 1966, pp. 301-302.

R.E. Beehler, R.C. Mockler, and J.M. Richardson, "Cesium Beam Atomic Time and Frequency Standards," Int. J. Sci. Metrology, vol. 1, pp. 114-131, 1965.

J.H. Shirley, "Some Causes of Resonant Frequency Shifts in Atomic Beam Machines. I. Shifts Due to Other Frequencies of Excitation," J. Appl. Phys., vol. 34, pp. 783-788, 1963.

R.E. Beehler, W.R. Atkinson, L.E. Heim, and C.S. Snider, "A Comparison of Direct and Servo Methods for Utilizing Cesium Beam Resonators as Frequency Standards," IRE Trans. Instrum., vol. 11, pp. 231-238, 1962.

M. Mizushima, "Theory of Resonance Frequency Shift Due to the Radiation Field," NBS Report 7283, pp. 1-18, 1962.

R.C. Mockler, "Atomic Beam Frequency Standards," Advances in Electronics and Electron Physics, vol. 15, pp. 1-71, 1962.

J.M. Richardson, R.E. Beehler, R.C. Mockler, and R.L. Fey, "Atomic Frequency Standards at the National Bureau of Standards," NBS Report 6766, pp. 1-12, 1961.

R.C. Mockler, R.E. Beehler, and C.S. Snider, "Atomic Beam Frequency Standards," IRE Trans. Instrum., vol. 9, pp. 120-132, 1960.

J.A. Barnes and R.C. Mockler, "The Power Spectrum and Its Importance in Precise Frequency Measurements," NBS Report 6709, pp. 1-30, 1960.

R.C. Mocker and R.E. Beehler, "NBS Atomic Frequency Standards," Proc. 14th Ann. Symp. Freq. Control, Ft. Monmouth, NJ, May 30-June 2, 1960, pp. 298-309.

R.C. Mockler, R.E. Beehler, and J.A. Barnes, "An Evaluation of a Cesium Beam Frequency Standard," NBS Report 6075, pp. 1-25, 1959.

N. Tepley, "Ultimate Noise Limitations of Electron Multipliers and Vacuum Tube Electrometers as Used for the Measurement of Beam Current in a Cesium Clock," NBS Report 6073, pp. 1-9, 1959.

R.C. Mockler, R.E. Beehler, and J.A. Barnes, "A Practical Limitation to the Length of an Atomic Beam Machine," NBS Report 6059, pp. 1-14, 1959.

H. Lyons, "Spectral Lines as Frequency Standards," NBS Report 1848, 1952.

H. Lyons, "The Atomic Clock," American Scholar, vol. 19, pp. 159-168, 1950.

DIODE LASERS

A.S. Zibrov, R.W. Fox, R. Ellingeen, C.S. Weimer, V.L. Velichansky, F.M. Tino, and L. Hollberg, "High-Resolution Diode Laser Spectroscopy of Calcium," Appl. Phys. B., vol. 59, pp. 327-331, 1994.

R.W. Fox, S.L. Gilbert, L. Hollberg, J.H. Marquardt, and H.G. Robinson, "Optical Probing of Cold Trapped Atoms," Opt. Lett., vol. 18, pp. 1456-1458, 1993.

R.W. Fox, C. Weimer, L. Hollberg, and G.C. Turk, "The Diode Laser as a Spectroscopic Tool," Spectrochimica Acta, vol. 15, pp. 291-299, 1993.

M. Murtz, M. Schaefer, M. Schneider, J.S. Wells, W. Urban, U. Schiessl, and M. Tacke, "Stabilization of 3.3 and 5.1 μm Lead-Salt Diode Lasers by Optical Feedback," Opt. Communications, vol. 94, pp. 551-556, 1992.

R.W. Fox, H.C. Robinson, A.S. Zibrov, N. Mackie, J. Marquardt, J. Magyar, and L.W. Hollberg, "High-Sensitivity Spectroscopy with Diode Lasers," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, vol. 1837, Y.C. Chung, ed., Boston, MA, Nov. 15-19, 1992, pp. 360-365.

S. Waltman, A. Romanovsky, J. Wells, R.W. Fox, L.W. Hollberg, M.P. Sassi, and H.G. Robinson, "Precise Optical Frequency References and Difference Frequency Measurements with Diode Lasers," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, vol. 1837, Y.C. Chung, ed., Boston, MA, Nov. 15-19, 1992, pp. 386-391.

C. Szekely and R.E. Drullinger, "Improved Rubidium Frequency Standard Performance Using Diode Lasers with AM and FM Noise Control," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, vol. 1837, Y.C. Chung, ed., Boston, MA, Nov. 15-19, 1992, pp. 299-305.

R.E. Drullinger, C. Szekely, and J.C. Camparo, "Diode-Laser-Pumped, Gas-Cell Atomic Clocks," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 104-107.

M. Murtz, M. Schaefer, M. Schneider, J.S. Wells, W. Urban, U. Schiessl, and M. Tacke, "Line Narrowing and Frequency Control of Lead-Salt Diode Lasers by Optical Feedback," Proc. Int. Symp., in Monitoring of Gaseous Pollutants by Tunable Diode Lasers, R. Grisar, H. Bottner, M. Tacke, and G. Restelli, eds. (Kluwer Academic Publishers), pp. 191-201, 1991.

L. Hollberg, R. Fox, N. Mackie, A.S. Zibrov, V.L. Velichansky, R. Ellingsen, and H.G. Robinson, "Diode Lasers and Spectroscopic Applications," Proc. 10th Int. Conf. on Laser Spectroscopy (TENICOLS), M. Ducloy, E. Giacobino and G. Camy, eds., Font-Rommeu, France, June 17-21, 1991, pp. 347-352.

C. Weiman and L. Hollberg, "Using Diode Lasers for Atomic Physics," Rev. Sci. Instrum., vol. 62, pp. 1-20, 1991.

G.M. Tino, L. Hollberg, A. Sasso, M. Inguscio, and M. Barsanti, "Hyperfine Structure of the Metastable $^5S_2$ State of ^{17}O Using an AlGaAs Diode Laser at 777 nm," Phys. Rev. Lett., vol. 64, pp. 2999-3002, 1990.

L. Hollberg, "Diode Lasers and Their Application to Spectroscopy," Applied Laser Spectroscopy, W. Demtroder and M. Inguscio, eds. (Plenum Press), pp. 117-125, 1990.

L. Hollberg, "Optical Stabilization of Semiconductor Lasers," Proc. 4th Symp. on Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, pp. 231-235.

L. Hollberg and M. Ohtsu, "Modulatable Narrowing-Linewidth Semiconductor Lasers," Appl. Phys. Lett., vol. 53, pp. 944-946, 1988.

B. Dahmani, L. Hollberg, and R.E. Drullinger, "Frequency Stabilization of Semiconductor Lasers by Resonant Optical Feedback," Opt. Lett., vol. 12, pp. 876-878, 1987.

G.E. Streit, J.S. Wells, F.C. Fehsenfeld, and C.J. Howard, "A Tunable Diode Laser Study of the Reactions of Nitric and Nitrous Acids: HNO_3+NO and HNO_2+O_3," J. Chem. Phys., vol. 70, pp. 3439-3443, 1979.

ELECTRONIC CONTROL SYSTEMS

L.M. Nelson, C.W. Nelson, and F.L. Walls, "Relationship of AM to PM Noise in Selected rf Oscillators," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 41, pp. 680-684, 1994.

F.L. Walls, C.W. Nelson, M. Sicarrdi, and A. DeMarchi, "A New 5 and 10 MHz High Isolation Distribution Amplifier," Proc. IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 567-571.

J.P. Lowe, W.D. Lee, F.L. Walls, and R.E. Drullinger, "A Hybrid Digital/Analog Servo for the NIST-7 Frequency Standard," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 662-665.

E.S. Ferre, L.M. Nelson, F.G. Ascarrunz, and F.L. Walls, "Relationship of AM to PM Noise in Selected rf and Microwave Oscillators," Proc. 12th Int. Conf. on Noise in Physical Systems and 1/f Fluctuations (ICNF), St. Louis, MO, Aug. 16-20, 1994, P.H. Handel and A.L. Chung, eds. (AIP Conf. Proc. 285), pp. 611-614.

F.G. Ascarrunz, E.S. Ferre, and F.L. Walls, "Investigations of AM and PM Noise in X-Band Devices," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 303-311.

F.L. Walls, "Reducing Errors, Complexity, and Measurement Time for PM Noise Measurements," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 289-297.

C. Szekely and R.E. Drullinger, "Improved Rubidium Frequency Standard Performance Using Diode Lasers with AM and FM Noise Control," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, Y.C. Chung, ed., Boston, MA, Nov. 15-19, vol. 1837, 1992, pp. 299-305.

F.L. Walls, "Local Oscillator Requirements and Strategies for the Next Generation of High Stability Frequency Standards," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 2-5.

C.W. Nelson, F.L. Walls, F.G. Ascarrunz, and P.A. Pond, "Progress on Prototype Synthesizer Electronics for $^{199}Hg^{+}$ at 40.5 GHz," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 64-69.

L.M. Nelson and F.L. Walls, "Environmental Effects In Mixers and Frequency Distribution Systems," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 831-837.

R.E. Drullinger, C. Szekely, and J.C. Camparo, "Diode-Laser-Pumped, Gas-Cell Atomic Clocks," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 104-107.

J. Lowe, F. L. Walls, and R.E. Drullinger, "Ultra-High Stability Synthesizer for Diode Laser Pumped Rubidium," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 183-187.

F.L. Walls, L.M. Nelson, and G.R. Valdez, "Designing for Frequency and Time Metrology at the 10^{-18} Level," Proc. 6th European Freq. and Time Forum, The Netherlands, Mar. 17-19, 1992, pp. 477-481.

J. Lowe and F.L. Walls, "Ultralinear Small-Angle Phase Modulator," Proc. 45th Ann. Symp. Freq. Control, Los Angeles, CA, May 29-31, 1991, pp. 645-648.

J. Lowe and F.L. Walls, "Ultralinear Small-Angle Phase Modulator," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 461-464.

M. Prevedelli, F.L. Walls, and S.P. Beaton, "High-Order Harmonic Mixing with GaAs Schottky Diodes," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 555-558.

C.M. Felton, "Superimposing Low-Phase-Noise, Low-Drift Instrumentation Techniques on RF Design," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 622-629.

F.L. Walls, C.M. Felton, T.D. Martin, "High Spectral Purity X-Band Source," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 542-548.

C.M. Felton, "Superimposing Low-Phase-Noise, Low-Drift Instrumentation Techniques on RF Design," RF Design, pp. 65-74, 1990.

S.R. Jefferts and F.L. Walls, "A Very Low Noise FET Input Amplifier," Rev. Sci. Instrum., vol. 60, pp. 1194-1196, 1989.

F.L. Walls, "Stability of Frequency Locked Loops," Proc. 4th Symp. on Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, pp. 145-149.

F.L. Walls and C.M. Felton, "Low Noise Frequency Synthesis," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1988, pp. 512-518.

S.R. Jefferts and F.L. Walls, "A Low Noise Cascode Amplifier," NBS JRES., vol. 92, pp. 383-386, 1987.

F.L. Walls, "Errors in Determining the Center of a Resonance Line Using Sinusoidal Frequency (Phase) Modulation," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 34, pp. 592-596, 1987.

F.L. Walls, "Errors in Servo Systems Using Sinusoidal Frequency (Phase) Modulation," Proc. 39th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-31, 1985, pp. 91-95.

F.L. Walls and J.J. Gagnepain, "Special Applications," Precision Frequency Control, E.A. Gerber and A. Ballato, eds. (Academic Press), vol. 2, pp. 287-296, 1985.

F.L. Walls, "Other Means for Precision Frequency Control," Precision Frequency Control, E.A. Gerber and A. Ballato, eds. (Academic Press), pp. 275-285, 1985.

S.R. Stein and F.L. Walls, "Composite Oscillator Systems for Mtg. User Needs for Time and Frequency," Proc. Position Location and Navigation Symp. (PLANS), 1978, pp. 22-28.

S.R. Stein, C.M. Manney, Jr., F.L. Walls, J.E. Gray, and R.J. Besson, "A Systems Approach to High Performance Oscillators," Proc. 32nd Ann. Symp. Freq. Control, Atlantic City, NJ, May 31-June 2, 1978, pp. 527-530.

F.L. Walls and S.R. Stein, "Servo Techniques in Oscillators and Measurement Systems," NBS TN 692, 1976.

S.R. Stein, "Application of Superconductivity to Precision Oscillators," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 321-327.

A.S. Risley, J.H. Shoaf, and J.R. Ashley, "Frequency Stabilization of X-Band Sources for Use in Frequency Synthesis into the Infrared," IEEE Trans. Instrum. Meas., vol. 23, pp. 187-195, 1974.

D. Halford, A.E. Wainwright, and J.A. Barnes, "Flicker Noise of Phase in RF Amplifiers and Frequency Multipliers: Characterization, Cause, and Cure," Proc. 22nd Ann. Symp. Freq. Control, Ft. Monmouth, NJ, Apr. 22-24, 1968, pp. 340-341.

J.A. Barnes and A. Wainwright, "A Precision Pulse-Operated Electronic Phase Shifter and Frequency Translator," Proc. IEEE, vol. 53, 1965, pp. 2143-2144.

Y. Beers, "A New Mode of Operation of a Phase Sensitive Detector," NBS Report 8400, pp. 1-17, 1964.

R.E. Beehler, W.R. Atkinson, L.E. Heim, and C.S. Snider, "A Comparison of Direct and Servo Methods for Utilizing Cesium Beam Resonators as Frequency Standards," IRE Trans. Instrum., vol. 11, pp. 231-238, 1962.

FREQUENCY SYNTHESIS

S. Waltman, A. Romanovsky, J. Wells, R.W. Fox, L.W. Hollberg, M.P. Sassi, and H.G. Robinson, "Precise Optical Frequency References and Difference Frequency Measurements with Diode Lasers," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, vol. 1837, Y.C. Chung, ed., Boston, MA, Nov. 15-19, 1992, pp. 386-391.

F.L. Walls, "Local Oscillator Requirements and Strategies for the Next Generation of High Stability Frequency Standards," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 2-5.

C.W. Nelson, F.L. Walls, F.G. Ascarrunz, and P.A. Pond, "Progress on Prototype Synthesizer Electronics for $^{199}Hg^{+}$ at 40.5 GHz," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 64-69.

T.D. Varberg and K.M. Evenson, "Accurate Far-Infrared Rotational Frequencies of Carbon Monoxide," Atrophys. J., vol. 385, pp. 763-765, 1992.

L.R. Zink, K.M. Evenson, F. Matsushima, T. Nelis, and R. Robinson, "Atomic Oxygen Fine-Structure Splittings with Tunable Far-Infrared Spectroscopy," Astrophys. J., vol. 371, pp. L85-L86, 1991.

M. Prevedelli, F.L. Walls, and S.P. Beaton, "High-Order Harmonic Mixing with GaAs Schottky Diodes," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 555-558.

F.L. Walls, C.M. Felton, T.D. Martin, "High Spectral Purity X-Band Source," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 542-548.

E.C.C. Vasconcellos and K.M. Evenson, "Far Infrared Lasing Frequencies of CH_2DOD," Int. J. Infrared Millimeter Waves, vol. 11, pp. 785-789, 1990.

L.R. Zink, P. De Natale, F.S. Pavone, M. Prevedelli, K.M. Evenson, and M. Inguscio, "Rotational Far Infrared Spectrum of $^{13}CO^{1}$," J. Mol. Spectrosc., vol. 143, pp. 304-310, 1990.

D.J. Wineland, J.C. Bergquist, W.M. Itano, F. Diedrich, and C.S. Weimer, "Frequency Standards in the Optical Spectrum," in The Hydrogen Atom, G.F. Bassani, M. Inguscio, and T.W. Hansch, eds. (Springer Verlag), pp. 123-133, 1989.

D.A. Jennings, "Coherent Tunable Far Infrared Radiation," Appl. Phys. B, vol. 48, pp. 311-313, 1989.

F.L. Walls and C.M. Felton, "Low Noise Frequency Synthesis," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1988, pp. 512-518.

L.R. Zink, D.A. Jennings, K.M. Evenson, A. Sasso, and M. Inguscio, "Stark Spectroscopy Using Tunable Far Infrared Radiation," J. Opt. Soc. Am. B, vol. 4, pp. 1173-1176, 1987.

I.G. Nolt, J.V. Radostitz, G. DiLonardo, K.M. Evenson, D.A. Jennings, K.R. Leopold, M.D. Vanek, L.R. Zink, A. Hinz, and K.V. Chance, "Accurate Rotational Constants of CO, HCl, and HF: Spectral Standard for the 0.3 to 6 THz (10 to 200 cm^{-1}) Region," J. Mol. Spectrosc., vol. 125, pp. 274-287, 1987.

K.M. Evenson, D.A. Jennings, L.R. Zink, and K.R. Leopold, "Tunable Far Infrared Laser Spectroscopy," Proc. 11th Int. Conf. on Infrared and Millimeter Waves, Tirrenia, Pisa, Oct. 20-24, 1986, G. Moruzzi, ed. (ETS Editrice), pp. 267-271, 1986.

M. Inguscio, G. Moruzzi, K.M. Evenson, and D.A. Jennings, "A Review of Frequency Measurements of Optically Pumped Lasers from 0.1 to 8 THz," J. Appl. Phys., vol. 60, pp. R161-R192, 1986.

D.A. Jennings, K.M. Evenson, and D.J.E. Knight, "Optical Frequency Measurements," Proc. Spec. Issue of IEEE, vol. 74, 1986, pp. 168-179.

K.M. Evenson, M. Inguscio, and D.A. Jennings, "Point Contact Diode at Laser Frequencies," J. Appl. Phys., vol. 57, pp. 956-960, 1985.

K.M. Evenson, D.A. Jennings, F.R. Petersen, J.S. Wells, and R.E. Drullinger, "Optical Frequency Synthesis Spectroscopy," Prog. Quant. Electr., vol. 8, pp. 143-151, 1984.

C.R. Pollock, D.A. Jennings, F.R. Petersen, J.S. Wells, R.E. Drullinger, E.C. Beaty and K.M. Evenson, "Direct Frequency Measurements of Transitions at 520 THz (576 nm) in Iodine and 260 THz (1.15 μm) in Neon," Opt. Lett., vol. 8, pp. 133-135, 1983.

D.A. Jennings, C.R. Pollock, F.R. Petersen, R.E. Drullinger, K.M. Evenson, J.S. Wells, J.L. Hall, and H.P. Layer, "Direct Frequency Measurement of the I_2-Stabilized He-Ne 473-THz (633-nm) Laser," Opt. Lett., vol. 8, pp. 136-138, 1983.

R.E. Drullinger, K.M. Evenson, D.A. Jennings, F.R. Petersen, J.C. Bergquist, and L. Burkins, "2.5-THz Frequency Difference Measurements in the Visible Using Metal-Insulator-Metal Diodes," Appl. Phys. Lett., vol. 42, pp. 137-138, 1983.

E.C.C. Vasconcellos, J.C. Wyss, F.R. Petersen, and K.M. Evenson, "Frequency Measurements of Far Infrared cw Lasing Lines in Optically Pumped $CHCl_2F$," Int. J. Infrared Millimeter Waves, vol. 4, pp. 401-406, 1983.

J.C. Bergquist, H. Hemmati, and W.M. Itano, "High Power Second Harmonic Generation of 257 nm Radiation in an External Ring Cavity," Opt. Commun., vol. 43, pp. 437-442, 1982.

H. Hemmati, J.C. Bergquist, and W.M. Itano, "Sum Frequency Generation of CW 194 nm Radiation in Potassium Pentaborate," Proc. 6th Int. Conf. on Laser Spectroscopy (SICOLS), 1982, pp. 485-490.

K.M. Evenson, D.A. Jennings, and F.R. Petersen, "The Frequency Measurement of Visible Light," J. Phys. (Paris), vol. Colloque C8, pp. 473-483, 1981.

D.A. Jennings, F.R. Petersen, and K.M. Evenson, "Frequency Measurement of the 260-THz (1.15 μm) He-Ne Laser," Opt. Lett., vol. 4, pp. 129, 1979.

D.J. Wineland, "Laser-To-Microwave Frequency Division Using Synchrotron Radiation," J. Appl. Phys., vol. 50, pp. 2528-2532, 1979.

D.A. Jennings, F.R. Petersen, and K.M. Evenson, "Direct Frequency Measurement of the ^{20}Ne Laser at the 260 THz (1.15 μm): and Beyond," Proc. Laser Spectroscopy IV (Springer-Verlag), 1979.

J.C. Bergquist and D.J. Wineland, "Laser to Microwave Frequency Division Using Synchrotron Radiation II," Proc. 33rd Ann. Symp. Freq. Control, Atlantic City, NJ, May 30-June 1, 1979, pp. 494-497.

H. Hellwig, K.M. Evenson, and D.J. Wineland, "Time, Frequency and Physical Measurement," Phys. Today, pp. 23-30, 1978.

A.S. Risley, E.G. Johnson, Jr., and C.A. Hamilton, "Analog Computer Studies of Frequency Multiplication and Mixing with the Josephson Junction," IEEE Trans. Magn., vol. 13, pp. 381-384, 1977.

A.S. Risley, "A Study of Point-Contact Josephson Junctions for Use in Frequency Synthesis," Proc. 31st Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 1-3, 1977, pp. 583-589.

K.M. Evenson, D.A. Jennings, F.R. Petersen, and J.S. Wells, "Laser Frequency Measurements: A Review, Limitations, Extension to 197 THz (1.5 μm)," Laser Spectroscopy III, J.L. Hall and J.L. Carlsten, eds. (Springer-Verlag), vol. 7, pp. 56-68, 1977.

J.S. Wells, G.E. Streit, and F.R. Petersen, "Absolute Spin-Flip Raman Laser Frequency Measurements with Metal-Insulator-Metal Diodes," Opt. Commun., vol. 19, pp. 248-252, 1976.

H. Hellwig, P. Tomingas, and S. Werthman, eds., "Copper Mountain Conf.," Proc. 2nd Freq. Stand. and Metrology Symp., Copper Mountain, CO, July 5-7, 1976, pp. 1-698.

J.S. Wells, G.E. Streit, and F.R. Petersen, "Application of Infrared Frequency Synthesis Techniques With Metal-Insulator-Metal Diodes to the Spin Flip Raman Laser," NBS TN 680, 1976.

J.S. Wells, F.R. Petersen, G.E. Streit, P.D. Goldan, and C.M. Sadowski, "An Infrared Spectrometer Utilizing A Spin Flip Raman Laser, IR Frequency Synthesis Techniques, and CO_2 Laser Frequency Standards," NBS TN 670, 1976.

F.R. Petersen, K.M Evenson, D.A. Jennings, J.S. Wells, K. Goto, and J.J. Jimenez, "Far Infrared Frequency Synthesis with Stabilized CO_2 Lasers: Accurate Measurements of the Water Vapor and Methyl Alcohol Laser Frequencies," IEEE J. Quantum Electron., vol. 11, pp. 838-843, 1975.

F.L. Walls and A. DeMarchi, "RF Spectrum of a Signal after Frequency Multiplication; Measurement and Comparison with a Simple Calculation," IEEE Trans. Instrum. Meas., vol. 24, pp. 210-217, 1975.

D.A. Jennings, F.R. Petersen, and K.M. Evenson, "Extension of Absolute Frequency Measurements to 148 THz: Frequencies of the 2.0- and 3.5-μm Xe Laser," Appl. Phys. Lett., vol. 26, pp. 510-511, 1975.

D.A. Howe and H.F. Salazar, "A Digital 5.00688 MHz Synthesizer and Squarewave FM Servo System for Cesium Standards," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 387-393.

A.S. Risley, J.H. Shoaf, and J.R. Ashley, "Frequency Stabilization of X-Band Sources for Use in Frequency Synthesis into the Infrared," IEEE Trans. Instrum. Meas., vol. 23, pp. 187-195, 1974.

J.S. Wells, D.G. McDonald, A.S. Risley, S. Jarvis, and J.D. Cupp, "Spectral Analysis of a Phase Locked Laser at 891 GHz, an Application of Josephson Junctions in the Far Infrared," Revue de Physique Appliquée, vol. 9, pp. 285-292, 1974.

A.E. Wainwright, F.L. Walls, and W.D. McCaa, "Direct Measurements of the Inherent Frequency Stability of Quartz Crystal Resonators," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 177-179.

J.S. Wells, "A Stabilized HCN Laser for Infrared Frequency Synthesis," IEEE Trans. Instrum. Meas., vol. 22, pp. 113-118, 1973.

K.M. Evenson, "Comparing Frequencies," Phys. Today, vol. 26, pp. 15, 1973.

D. Halford, H. Hellwig, and J.S. Wells, "Progress and Feasibility for a Unified Standard for Frequency, Time, and Length," Proc. IEEE, vol. 60, 1972, pp. 623-625.

J.S. Wells, K.M. Evenson, G.W. Day, and D. Halford, "Role of Infrared Frequency Synthesis in Metrology," Proc. IEEE, vol. 60, 1972, pp. 621-623.

D.G. McDonald, A.S. Risley, J.D. Cupp, and K.M. Evenson, "Four-Hundredth-Order Harmonic Mixing of Microwave and Infrared Laser Radiation Using a Josephson Junction and a Maser," Appl. Phys. Lett., vol. 20, pp. 296-299, 1972.

D.G. McDonald, A.S. Risley, J.D. Cupp, and K.M. Evenson, "Harmonic Mixing of Microwave and Far-Infrared Laser Radiation Using a Josephson Junction," Appl. Phys. Lett., vol. 18, pp. 162-164, 1971.

D. Halford, "Infrared-Microwave Frequency Synthesis Design: Some Relevant Conceptual Noise Aspects," Proc. Freq. Stand. and Metrology Sem., Quebec, Canada, 1971, pp. 431-461.

A.S. Risley, "The Josephson Junction as Applied to the Measurement of the Frequencies of Several Laser Lines," Proc. Freq. Stand. and Metrology Sem., Quebec, Canada, 1971, pp. 325-327.

K.M. Evenson, J.S. Wells, and L.M. Matarrese, "Absolute Frequency Measurements of the CO_2 cw Laser at 28 THz (10.6 μm)," Appl. Phys. Lett., vol. 16, pp. 251-253, 1970.

K.M. Evenson, J.S. Wells, L.M. Matarrese, and L.B. Elwell, "Absolute Frequency Measurements of the 28- and 78-μm cw Water Vapor Laser Lines," Appl. Phys. Lett., vol. 16, pp. 159-161, 1970.

GENERAL TIME AND FREQUENCY

D.B. Sullivan, "Time and Frequency Technology at NIST," Proc. 25th Ann. PTTI Mtg., Marina Del Ray, CA, Nov. 29-Dec. 2, 1993, pp. 33-37.

J. Levine, "The Future of Time and Frequency Dissemination," Proc. 25th Ann. PTTI Mtg., Marina Del Ray, CA, Nov. 29-Dec. 2, 1993, pp. 573-578.

W.M. Itano and N.F. Ramsey, "The Accurate Measurement of Time," Sci. Am., vol. 269, pp. 56-65, 1993.

J. Vanier, J.J. Gagnepain, W.J. Riley, F.L. Walls, and M. Granveaud, "Aging, Warm-Up Time and Retrace; Important Characteristics of Standard Frequency Generators," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 807-815.

D.W. Allan, J. Barnes, F. Cordara, M. Garvey, W. Hanson, R. Kinsman, J. Kusters, R. Smythe, and F.L. Walls, "Dependence of Frequency on Temperature, Humidity, and Pressure in Precision Oscillators," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 782-793.

D.B. Sullivan and J. Levine, "Time Generation and Distribution," Proc. IEEE, vol. 79, 1991, pp. 906-914.

J.A. Barnes and J.J. Bollinger, "Clocks, Atomic and Molecular," Encyclopedia of Physics, R.G. Lerner, ed. (VCH Publishers, Inc.), pp. 154-155, 1989.

R.E. Drullinger, "The Outlook for Advances in the Realization of the SI Unit of Time," IMEKO XI, The 11th Triennial World Congress of Int. Measurement Confederation, Houston, TX, Oct. 17, 1988, pp. 89-92.

W.M. Itano, "Atomic Clocks," McGraw-Hill Encyclopedia of Science and Technology, 7th Edition, (McGraw-Hill), pp. 240-242, 1988.

D.B. Sullivan, "Activities and Plans of the Time and Frequency Division of the National Bureau of Standards," Proc. 18th Ann. PTTI Mtg., Washington, DC, Dec. 2-4, 1986, pp. 1-9.

D.W. Hanson and J.L. Jespersen, "Secure Military Communications can Benefit from Accurate Time," Proc. MILCOM '86, 1986 IEEE Military Communications Conf., vol. 2, 1986, pp. 29.2.1-.

D.W. Allan and G.M.R. Winkler, "Pulsar Clock," Letters to the Editor, SCIENCE, vol. 220, pp. 776, 1984.

S.R. Stein, "The Design of Atomic Frequency Standards and Their Performance in Specific Applications," Proc. Workshop on Spectroscopic Applications of Slow Atomic Beams, NBS Special Publication 653, 1983, pp. 9-18.

J.A. Barnes, "Clocks, Atomic and Molecular," Encyclopedia of Physics 1980, pp. 124-125, 1980.

F.L. Walls, "Prospects for Advances in Microwave Atomic Frequency Standards," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 619-640.

D.J. Wineland, "Limitations on Long-Term Stability and Accuracy in Atomic Clocks," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 81-110.

S.R. Stein, "Impact of Improved Clocks and Oscillators on Communications and Navigation Systems," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 31.

H. Hellwig, K.M. Evenson, and D.J. Wineland, "Time, Frequency and Physical Measurement," Phys. Today, pp. 23-30, 1978.

H. Hellwig, S.R. Stein, F.L. Walls, and A. Kahan, "Relationships Between the Performance of Time/Frequency Standards and Navigation/Communication Systems," Proc. 10th Ann. PTTI Mtg., Greenbelt, MD, Nov. 28-30, 1978, pp. 37-51.

D.W. Allan, R.J. Besson, G. Busca, R.M. Garvey, H. Hellwig, D.A. Howe, S. Jarvis, A. Risley, S.R. Stein, F.L. Walls, and D.J. Wineland, "Some Recent Progress in Microwave Frequency and Time Standards at the

National Bureau of Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 343-352.

H. Hellwig, "Design Principles and Characteristics of Frequency and Time Standards," IEEE Trans. Nucl. Sci., vol. 23, pp. 1629-1635, 1976.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

H. Hellwig, P. Tomingas, and S. Werthman, eds., "Copper Mountain Conf.," Proc. 2nd Freq. Stand. and Metrology Symp., Copper Mountain, CO, July 5-7, 1976, pp. 1-698.

A.S. Risley, "The National Measurement System for Time and Frequency," NBS SP 445-1, 1976.

H. Hellwig, D.W. Allan, and F.L. Walls, "Time and Frequency," Proc. 5th Int. Conf. on Atomic Masses and Fundamental Constants (AMCO-5), Paris, France, June 2-6, 1975, in Atomic Masses and Fundamental Constants, J.H. Sanders, ed. (Plenum Press), vol. 5, 1975, pp. 305-311, 1976.

H. Hellwig, "A Review of Precision Oscillators," NBS TN 662, 1975.

H. Hellwig, "Atomic Frequency Standards: A Survey," Proc. IEEE, vol. 63, 1975, pp. 212-229.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

J.A. Barnes and G.M.R. Winkler, "The Standards of Time and Frequency in the U.S.A.," NBS TN 649, 1974.

H. Hellwig, H.E. Bell, J.C. Bergquist, D.J. Glaze, D.A. Howe, S. Jarvis, Jr., A.E. Wainwright, and F.L. Walls, "Results in Operation, Research and Development of Atomic Clocks at the National Bureau of Standards," Proc. Int. Congress of Chronometry (CIC), 1974, pp. 1-13.

J.L. Jespersen and L. Fey, "Time-Telling Techniques," IEEE Spectrum, vol. 9, pp. 51-58, 1972.

J.L. Jespersen, B.E. Blair, and L.E. Gatterer, "Scanning the Issue: Special Issue on Time and Frequency," Proc. IEEE, vol. 60, 1972, pp. 476-478.

P. Kartaschoff and J.A. Barnes, "Standard Time and Frequency Generation," Proc. IEEE, vol. 60, 1972, pp. 493-501.

B.E. Blair, "Time and Frequency: A Bibliography of NBS Literature," NBS SP 350, Supplement 1, 1972.

B.E. Blair, "Time and Frequency: A Bibliography of NBS Literature Published July 1955-Dec. 1970," NBS SP 350, 1971.

A.S. Risley, "The Physical Basis of Atomic Frequency Standards," NBS TN 399, 1971.

H. Hellwig, "Areas of Promise for the Development of Future Primary Frequency Standards," Int. J. Sci. Metrology, vol. 6, pp. 118-126, 1970.

R.C. Baird, J.A. Barnes, R.W. Beatty, G. Birnbaum, M. Birnbaum, H.E. Bussey, E.W. Chapin, G.F. Engen, W.W. Mumford, N.S. Nahman, G.E. Schafer, M.C. Selby, and B.O. Weinschel, "Progress in Radio Measurement Methods and Standards," Radio Sci., vol. 4, pp. 579-590, 1969.

G.E. Hudson, D. W. Allan, J.A. Barnes, R. Hall, J.D. Lavanceau, and G.M.R. Winkler, "A Coordinate Frequency and Time System," Proc. 23rd Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 6-8, 1969, pp. 249-262.

J.M. Richardson and J.F. Brockman, "Atomic Standards of Frequency and Time," Phys. Teach., vol. 4, pp. 247-256, 1966.

G. Hudson, "Of Time and the Atom...," Phys. Today, pp. 34-38, 1965.

R.E. Beehler and R.C. Mockler, "A Comparison of Atomic Frequency Standards," Progress in Radio Science, vol. I, pp. 20-26, 1965.

G.E. Hudson, "Frequency and Time Standards," Electron. World, 1964.

J.M. Richardson, "Time Standards," Encyclopedic Dictionary of Physics, vol. 1, pp. 1-4, 1964.

GEOPHYSICS

J. Levine, "Measurement of Very Low Frequency Vibrations," Vibration Monitoring and Control, Proc. SPIE Conf. on Vibration Measurement, San Diego, CA, July 28-29, 1994, vol. 2264, pp. 160-169.

J. Levine, "Measurements of Tilt Using a Borehole Tiltmeter," Proc. Sensors Expo Int., Cleveland, OH, Sept. 12, 1990, pp. 103B1-7.

J. Levine, C. Meertens, and R. Busby, "Tilt Observations Using Borehole Tiltmeters 1. Analysis of Tidal and Secular Tilt," J. Geophys. Res., vol. 94, pp. 574-586, 1989.

C. Meertens, J. Levine, and R. Busby, "Tilt Observations Using Borehole Tiltmeters 2. Analysis of Data from Yellowstone National Park," J. Geophys. Res., vol. 94, pp. 587-601, 1989.

J. Levine, J.C. Harrison, and W. Dewhurst, "Gravity Tide Measurements with a Feedback Gravity Meter," J. Geophys. Res., vol. 91, pp. 12,835-12,841, 1986.

J. Levine, "D. Multiple Wavelength Electromagnetic Distance Measurement," Geodetic Refraction, F.K. Brunner, ed. (Springer Verlag), pp. 45-51, 1984.

M.A. Zumberge, J.E. Faller, and J. Gschwind, "Results from an Absolute Gravity Survey in the United States," J. Geophys. Res., vol. 88, pp. 7495-7502, 1983.

J. Levine, "The Earth Tides," Phys. Teach., pp. 588-595, 1982.

J.C. Harrison, J. Levine, and C.M. Meertens, "Design of a Deep Borehole Tiltmeter," Proc. 9th Int. Symp. on Earth Tides, 1981, pp. 273-281.

J. Levine, J.C. Harrison, and C.M. Meertens, "Performance of a Deep Borehole Tiltmeter," Proc. 9th Int. Symp. on Earth Tides, 1981, pp. 47-57.

J. Levine, "Observation of the Nearly Diurnal Resonance of the Earth Using a Laser Strainmeter," Proc. 9th GEOP Conf., Columbus, OH, Oct. 2-5, 1978, pp. 333-336.

J. Levine, "Multiple Wavelength Geodesy," Proc. 9th GEOP Conf., 1978, pp. 99-101.

J. Levine, "Strain-tide Spectroscopy," Geophys. J.R. Astr. Soc., vol. 54, pp. 27-41, 1978.

J. Levine, "Laser Distance-Measuring Techniques," Ann. Rev. Earth Planet. Sci., pp. 357-369, 1977.

J.E. Faller and J. Levine, "The Measurement of the Positions of Points on the Earth's Surface Using an Absolute Gravimeter and Multi-Wavelength Geodimeter as Complements to Extraterrestrial Techniques," Scientific Applications of Lunar Laser Ranging, J.D. Mulholland, ed. (D. Reidel Publishing Co.), pp. 277-283, 1977.

J. Levine and J.C. Harrison, "Earth Tide Strain Measurements in the Poorman Mine Near Boulder, Colorado," J. Geophys. Res., vol. 81, pp. 2543-2555, 1976.

J. Berger and J. Levine, "The Spectrum of Earth Strain From 10^{-8} to 10^{2} Hz," J. Geophys. Res., vol. 79, pp. 1210-1214, 1974.

J. Levine and R.T. Stebbins, "Ultra Sensitive Laser Interferometers and Their Application to Problems of Geophysical Interest," Philos. Trans. R. Soc. London, Ser. A, vol. 274, pp. 279-284, 1973.

J. Levine and R. Stebbins, "Upper Limit on the Gravitational Flux Reaching the Earth from the Crab Pulsar," Phys. Rev. D, vol. 5, pp. 1465-1468, 1972.

HYDROGEN MASERS

W.M. Itano and N.F. Ramsey, "The Accurate Measurement of Time," Sci. Am., vol. 269, pp. 56-65, 1993.

N.A. Demidov, A.A. Belyaev, B.A. Sakharov, A.A. Jljanov, and F.L. Walls, "Passive Hydrogen Maser Frequency Stability and Accuracy Investigations," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 353-357.

A.A. Uljanov, N.A. Demidov, E.M. Mattison, R.F.C. Vessot, D.W. Allan, and G.M.R. Winkler, "Performance of Soviet and U.S. Hydrogen Masers," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 509-524.

K.B. Persson and F.L. Walls, "Investigation of the Hydrogen Source for Masers," NBS TN 1315, 1988.

F.L. Walls, "Characteristics and Performance of Miniature NBS Passive Hydrogen Masers," IEEE Trans. Instrum. Meas., vol. 36, pp. 596-603, 1987.

F.L. Walls, "Frequency Standards Based on Atomic Hydrogen," Proc. IEEE, vol. 74, 1986, pp. 142-146.

F.L. Walls and K.B. Persson, "A New Miniaturized Passive Hydrogen Maser," Proc. 38th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-June 1, 1984, pp. 416-419.

D.A. Howe and F.L. Walls, "A Compact Hydrogen Maser with Exceptional Long-Term Stability," IEEE Trans. Instrum. Meas., vol. 32, pp. 218-223, 1983.

R. Decher, D.W. Allan, C.O. Alley, C. Baugher, B.J. Duncan, R.F.C. Vessot, and G.M.R. Winkler, "High-Accuracy Global Time and Frequency Transfer with a Space-Borne Hydrogen Maser Clock," Proc. 14th Ann. PTTI Mtg., Greenbelt, MD, Nov. 20-Dec.2, 1982, pp. 205-221.

D.W. Allan, C.O. Alley, Jr., R.Decher, R.F.C. Vessot, and G. Winkler, "Shuttle Experiment to Demonstrate High-Accuracy Global Time and Frequency Transfer," IEEE Trans. Geosci. Remote Sensing, vol. 20, pp. 321-325, 1982.

F.L. Walls and D.A. Howe, "Precision Timekeeping Using a Small Passive Hydrogen Maser," Proc. 12th Ann. PTTI Mtg., Greenbelt, MD, Dec. 2-4, 1981, pp. 785-804.

D.W. Allan, C.O. Alley, N. Ashby, R. Decher, R.F.C. Vessot, and G.M.R. Winkler, "Ultra-Accurate International Time and Frequency Comparison via an Orbiting Hydrogen-Maser Clock," J. Phys. (Paris), vol. Colloque C8, pp. 395-413, 1981.

F.L. Walls and D.A. Howe, "Timekeeping Potentials Using Passive Hydrogen Masers," J. Phys. (Paris), vol. Colloque C8, pp. 151-158, 1981.

D.W. Allan, C.O. Alley, R. Decher, R.F.C. Vessot, and G.M.R. Winkler, "Shuttle Time and Frequency Transfer Experiment," NASA Technical Memorandum NASA TM-78288, 1980.

F.L. Walls, "Prospects for Advances in Microwave Atomic Frequency Standards," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 619-640.

D.J. Wineland, "Limitations on Long-Term Stability and Accuracy in Atomic Clocks," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 81-110.

H. Hellwig, K.M. Evenson, and D.J. Wineland, "Time, Frequency and Physical Measurement," Phys. Today, pp. 23-30, 1978.

D.A. Howe, F.L. Walls, H.E. Bell, and H. Hellwig, "A Small, Passively Operated Hydrogen Maser," Proc. 32nd Ann. Symp. Freq. Control, Atlantic City, NJ, May 31-June 2, 1978, pp. 554-568.

F.L. Walls and D.A. Howe, "A Passive Hydrogen Maser Frequency Standard," Proc. 32nd Ann. Symp. Freq. Control, Atlantic City, NJ, May 31-June 2, 1978, pp. 492-498.

D.W. Allan, R.J. Besson, G. Busca, R.M. Garvey, H. Hellwig, D.A. Howe, S. Jarvis, A. Risley, S.R. Stein, F.L. Walls, and D.J. Wineland, "Some Recent Progress in Microwave Frequency and Time Standards at the National Bureau of Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 343-352.

H. Hellwig, "Frequency Standards and Clocks: A Tutorial Introduction," NBS TN 616 (2nd revised edition), 1977.

H. Hellwig, "Design Principles and Characteristics of Frequency and Time Standards," IEEE Trans. Nucl. Sci., vol. 23, pp. 1629-1635, 1976.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

F.L. Walls and H. Hellwig, "A New Kind of Passively Operating Hydrogen Frequency Standard," Proc. 30th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 2-4, 1976, pp. 473-480.

F.L. Walls, "Design and Results from a Prototype Passive Hydrogen Maser Frequency Standard," Proc. 8th Ann. PTTI Mtg., Washington, DC, Nov. 20-Dec. 2, 1976, pp. 369-380.

H. Hellwig, "A Review of Precision Oscillators," NBS TN 662, 1975.

H. Hellwig, "Atomic Frequency Standards: A Survey," Proc. IEEE, vol. 63, 1975, pp. 212-229.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

H. Hellwig, H.E. Bell, J.C. Bergquist, D.J. Glaze, D.A. Howe, S. Jarvis, Jr., A.E: Wainwright, and F.L. Walls, "Results in Operation, Research and Development of Atomic Clocks at the National Bureau of Standards," Proc. Int. Congress of Chronometry (CIC), 1974, pp. 1-13.

H. Hellwig and H.E. Bell, "Some Experimental Results with an Atomic Hydrogen Storage Beam Frequency Standard," Metrologia, vol. 8, pp. 96-98, 1972.

H. Hellwig and H.E. Bell, "Experimental Results with Atomic Hydrogen Storage Beam Systems," Proc. 26th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 6-8, 1972, pp. 242-247.

A.S. Risley, "The Physical Basis of Atomic Frequency Standards," NBS TN 399, 1971.

H. Hellwig, R.C. Vessot, M.W. Levine, P.W. Zitzewitz, D.W. Allan and D.J. Glaze, "Measurement of the Unperturbed Hydrogen Hyperfine Transition Frequency," IEEE Trans. Instrum. Meas., vol. 19, pp. 200-209, 1970.

H. Hellwig, "Areas of Promise for the Development of Future Primary Frequency Standards," Int. J. Sci. Metrology, vol. 6, pp. 118-126, 1970.

H. Hellwig, "The Hydrogen Storage Beam Tube, a Proposal for a New Frequency Standard," Int. J. Sci. Metrology, vol. 6, pp. 56-60, 1970.

H. Hellwig, "Hydrogen Spin Exchange Frequency Shifts," NBS TN 387, 1970.

R.E. Beehler, "A Historical Review of Atomic Frequency Standards," Proc. IEEE, vol. 55, 1967, pp. 792-805.

R. Vessot, H. Peters, J. Vanier, R. Beehler, D. Halford, R. Harrach, D. Allan, D. Glaze, C. Snider, J. Barnes, L. Culter, and L. Bodily, "An Intercomparison of Hydrogen and Cesium Frequency Standards," IEEE Trans. Instrum. Meas., vol. 15, pp. 165-176, 1966.

R. Beehler, D. Halford, R. Harrach, D. Allan, D. Glaze, C. Snider, J. Barnes, R. Vessot, H. Peters, J. Vanier, L. Cutler, and L. Bodily, "An Intercomparison of Atomic Standards," Proc. IEEE, vol. 54, 1966, pp. 301-302.

R.C. Mockler, "Atomic Beam Frequency Standards," Advances in Electronics and Electron Physics, vol. 15, pp. 1-71, 1962.

ION STORAGE RESEARCH

D.J. Wineland, J.J. Bollinger, W.M. Itano, and D.J. Heinzen, "Squeezed Atomic States and Projection Noise in Spectroscopy," Phys. Rev. A, vol. 50, pp. 67-88, 1994.

M.E. Poitzsch, J.C. Bergquist, W.M. Itano, and D.J. Wineland, "Progress on a Cryogenic Linear Trap for $^{199}Hg^{+}$ Ions," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 744-746.

J.J. Bollinger, D.J. Wineland, and D.H.E. Dubin, "Non-neutral Ion Plasmas and Crystals, Laser Cooling, and Atomic Clocks," Phys. Plasmas, vol. 1, pp. 1403-1414, 1994.

C.S. Weimer, J.J. Bollinger, F.L. Moore, and D.J. Wineland, "Electrostatic Modes as a Diagnostic in Penning-Trap Experiments," Phys. Rev. A, vol. 49, pp. 3842-3853, 1994.

W.M. Itano, U. Eichmann, J.C. Bergquist, J.J. Bollinger, J.M. Gilligan, M.G. Raizen, and D.J. Wineland, "Light Scattered from Two Atoms," Proc. Int. Conf. on Lasers '93, Lake Tahoe, NV, Dec. 6-9, 1993, V.J. Corcoran and T.A. Goldman, eds. (STS Press), pp. 410-419.

W.M. Itano and N.F. Ramsey, "The Accurate Measurement of Time," Sci. Am., vol. 269, pp. 56-65, 1993.

U. Eichmann, J.C. Bergquist, J.J. Bollinger, J.M. Gilligan, W.M. Itano, J.G. Raizen, and D.J. Wineland, "Interference in the Resonance Fluorescence of Two Trapped Atoms," Proc. ELICOLS '93 Conf., Hot Springs, VA, June 14-18, 1993, pp. 43-48.

J.J. Bollinger, D. Heinzen, F. Moore, W.M. Itano, D.J. Wineland, and D. Dubin, "Electrostatic Modes of Ion-Trap Plasmas," Phys. Rev. A, vol. 48, pp. 525-545, 1993.

W.M. Itano, J.C. Bergquist, J.J. Bollinger, J.M. Gilligan, D.J. Heinzen, F.L. Moore, M.G. Raizen, and D.J. Wineland, "Quantum Projection Noise: Population Fluctuations in 2-Level Systems," Phys. Rev. A, vol. 47, pp. 3554-3570, 1993.

U. Eichmann, J.C. Bergquist, J.J. Bollinger, J.M. Gilligan, W.M. Itano, D.J. Wineland, and M.G. Raizen, "Young's Interference Experiment with Light Scattered from Two Atoms," Phys. Rev. Lett., vol. 70, pp. 2359-2362, 1993.

C. Weimer, F. Moore, and D.J. Wineland, "High-Order Multipole Excitation of a Bound Electron," Phys. Rev. Lett., vol. 70, pp. 2553-2556, 1993.

W.M. Itano, J.C. Bergquist, J.J. Bollinger, J.M. Gilligan, D.J. Heinzen, F.L. Moore, M.G. Raizen, and D.J. Wineland, "Quantum Measurements of Trapped Ions," Vistas in Astronomy (Pergamon Press) Proc. Int. Symp. on Quantum Physics and the Universe, Tokyo, Japan, Aug. 19-22, 1992, vol. 37, pp. 169-183.

D.J. Wineland, J.J. Bollinger, W.M. Itano, F.L. Moore, and D.J. Heinzen, "Spin Squeezing and Reduced Quantum Noise in Spectroscopy," Phys. Rev. Lett., vol. 46, pp. 6797-6800, 1992.

D.J. Wineland, "Trapped Atoms and Laser Cooling," Elementary Modern Physics, Paul Tipler, ed. (Worth Publishing), pp. 156-162, 1992.

J.C. Bergquist, W.M. Itano, and D.J. Wineland, "Laser Stabilization to a Single Ion," Proc. Varenna School (Int. School of Physics), Enrico Fermi, Italy, June 23-July 3, 1992, in Frontiers in Laser Spectroscopy, T.W. Hansch and M. Inguscio, eds. (North Holland), pp. 359-376.

J.J. Bollinger, D.J.Heinzen, F.L. Moore, W.M. Itano, and D.J. Wineland, "Low Order Modes of an Ion Cloud in a Penning Trap," Phys. Scripta, vol. 46, pp. 282-284, 1992.

J. Bollinger, D. Heinzen, F. Moore, C. Weimer, W. M. Itano, and D.J. Wineland, "Experimental Results on Normal Modes in Cold, Pure Ion Plasmas," Proc. Physics of Strongly Coupled Plasmas Conf., Rochester, NY, Aug. 17-21, 1992, pp. 393-397.

W.M. Itano, J.C. Bergquist, J.J. Bollinger, J.M. Gilligan, D.J. Heinzen, F.L. Moore, M.G. Raizen, and D.J. Wineland, "Precise Spectroscopy for Fundamental Physics," Proc. IXth Int. Conf. on Hyperfine Interactions, Osaka, Japan, Aug. 17-18, 1992, vol. 78, pp. 211-220.

D.J. Wineland, C.S. Weimer, and J.J. Bollinger, "Laser-Cooled Positron Source," Proc. Antihydrogen Workshop, Munich, July 30-31, 1992, J. Eades, ed. (Hyperfine Interactions), vol. 76, pp. 115-125.

M.G. Raizen, J.M. Gilligan, J.C. Bergquist, W.M. Itano, and D.J. Wineland, "Experiments with Ionic Crystals in a Linear Paul Trap," Phys. Rev. A, vol. 45, pp. 6493-6501, 1992.

J.C. Bergquist, J.J. Bollinger, W.M. Itano, and D.J. Wineland, "Trapped Ions and Laser Cooling III," NIST Tech. Note 1353, pp. 1-192, 1992.

M.C. Raizen, J.C. Bergquist, J.M. Gilligan, W.M. Itano, and D.J. Wineland, "Linear Trap for High-Accuracy Spectroscopy of Stored Ions," J. Modern Optics, vol. 39, pp. 233-242, 1992.

D.J. Wineland, J. Dalibard, and C. Cohen-Tannoudji, "Sisyphus Cooling of a Bound Atom," J. Opt. Soc. Am. B., pp. 32-42, 1992.

D.J. Wineland, J.J. Bollinger, D.J. Heinzen, W.M. Itano, and M.G. Raizen, "Search for Anomalous Spin-Dependent Forces Using Stored Ion Spectroscopy," Phys. Rev. Lett., vol. 67, pp. 1735-1738, 1991.

D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M. Itano, F.L. Moore, J.M. Gilligan, M.G. Raizen, D.J. Heinzen, C.S. Weimer, and C.H. Manney, "Recent Experiments on Trapped Ions at the National Institute of Standards and Technology," Proc. Enrico Fermi Summer School, Laser Manipulation of Atoms and Ions, E. Arimondo, W.D. Phillips, and F. Strumia, eds. (North Holland), pp. 553-567, 1991.

D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M. Itano, F.L. Moore, J.M. Gilligan, M.G. Raizen, C.S. Weimer, and C.H. Manney, "High Resolution Atomic Spectroscopy of Laser-Cooled Ions," Proc. Enrico Fermi Summer School, Laser Manipulation of Atoms and Ions, E. Arimondo, W.D. Phillips, and F. Strumia, eds. (North Holland), pp. 539-551, 1991.

W.M. Itano, J.C. Bergquist, J.J. Bollinger, and D.J. Wineland, "Laser Cooling of Trapped Ions," Proc. Enrico Fermi Summer School, Laser Manipulation of Atoms and Ions, E. Arimondo, W.D. Phillips, and F. Strumia, eds. (North Holland), pp. 519-537, 1991.

W. M. Itano, "Atomic Ion Frequency Standards," Proc. IEEE, vol. 79, 1991, pp. 936-942.

J.C. Bergquist, W.M. Itano, D.J. Wineland, F. Diedrich, F. Elsner, and M.B. Raizen, "Single Ion Optical Frequency Standard," Proc. 45th Ann. Symp. Freq. Control, Los Angeles, CA, May 29-31, 1991, pp. 534-538.

W.M. Itano, D.J. Heinzen, J.J. Bollinger, and D.J. Wineland, "Reply to "Comment on 'Quantum Zeno Effect'," Phys. Rev. A, vol. 43, pp. 5168-5169, 1991.

J.J. Bollinger, D.J. Heinzen, W.M. Itano, S.L. Gilbert, and D.J. Wineland, "A 303 MHz Frequency Standard Based on Trapped Be^+ Ions," IEEE Trans. Instrum. Meas., vol. 40, pp. 126-128, 1991.

W. M. Itano, "The Quantum Zeno Effect," Physics News in 1990, P.F. Schewe, ed., pp. 17-18, 1991.

F. L. Moore, "Penning Trap Experiments at the University of Washington and at NIST in Boulder," Proc. 19th INS Int. Symp. on Cooler Rings and Their Application, Tokyo, Japan, Nov. 5-8, 1990, pp. 98-107.

J.J. Bollinger, D.J. Heinzen, W.M. Itano, S.L. Gilbert, and D.J. Wineland, "Atomic Physics Tests of Nonlinear Quantum Mechanics," Proc. 12th Intl. Conf. on Atomic Physics, Ann Arbor, MI, July, 1990, pp. 461-480.

D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M, Itano, D.J. Heinzen, S.L. Gilbert, C.H. Manney, and M.G. Raizen, "Progress at NIST Toward Absolute Frequency Standards Using Stored Ions," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 37, pp. 515-523, 1990.

J.C. Bergquist, W.M. Itano, F. Elsner, M.G. Raizen, and D.J. Wineland, "Single Ion Optical Spectroscopy," Proc. Light Induced Kinetic Effects on Atoms, Ions and Molecules Workshop (LIKE), Elba Island, Italy, May 2-5, 1990, pp. 291-299.

D.J. Heinzen and D.J. Wineland, "Quantum-limited Cooling and Detection of Radio-Frequency Oscillations by Laser-Cooled Ions," Phys. Rev. A, vol. 42, pp. 2977-2994, 1990.

D.J. Wineland, W.M. Itano, J.C. Bergquist, J.J. Bollinger, D.J. Heinzen, C.H. Manney, F.L. Moore, M.G. Raizen, and C.S. Weimer, "Trapped Ion Frequency Standards," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 53-60.

D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M. Itano, D.J. Heinzen, S.L. Gilbert, C.H. Manney, M.G. Raizen, and C.S. Weimer, "Progress at NIST on Absolute Frequency Standards Using Stored Ions," Proc. 4th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 13-15, 1990, pp. 268-272.

W.M. Itano, D.J. Heinzen, J.J. Bollinger, and D.J. Wineland, "Quantum Zeno Effect," Phys. Rev. A, vol. 41, pp. 2295-2300, 1990.

J.J. Bollinger, S.L. Gilbert, D.J. Heinzen, W.M. Itano, and D.J. Wineland, "Liquid and Solid Atomic Ion Plasmas," Proc. Atomic Processes in Plasmas, Y.K. Kim, ed. (AIP), pp. 152-162.

J.J. Bollinger, S.L. Gilbert, D.J. Heinzen, W.M. Itano, and D.J. Wineland, "Observation of Correlations in Finite, Strongly Coupled Ion Plasmas," Proc. Yamada Conf. on Strongly Coupled Plasma Physics, Tokyo, Japan, Aug. 29-Sept. 2, 1990, Ichimaru, ed. (Elsevier Science Publishers), pp. 177-187, 1990.

D.J. Heinzen, J.J. Bollinger, W.M. Itano, S.L. Gilbert, and D.J. Wineland, "Test of the Linearity of Quantum Mechanics by rf Spectroscopy of the $^9Be^+$ Ground State," Coherence and Quantum Optics VI, J.H. Eberly, L. Mandel, and E. Wolf, eds. (Plenum Press), pp. 479-481, 1990.

W.M. Itano, J.C. Bergquist, F. Diedrich, and D.J. Wineland, "Quantum Optics of Single, Trapped Ions," Coherence and Quantum Optics VI, J. H. Eberly, L. Mandel, and E. Wolf, eds. (Plenum Press), pp. 539-541, 1990.

J.J. Bollinger and D.J. Wineland, "Microplasmas," Sci. Am., pp. 124-130, 1990.

J.C. Bergquist, F. Diedrich, W.M. Itano, and D.J. Wineland, "Hg^+ Single Ion Spectroscopy," Proc. 9th Int. Laser Spectroscopy Conf., Laser Spectroscopy IX, M.S. Feld, J.E. Thomas, and A. Mooradian, eds. (Academic Press), pp. 274-277, 1989.

D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M. Itano, D.J. Heinzen, S.L. Gilbert, C.H. Manney, and C.S. Weimer, "Progress at NIST Toward Absolute Frequency Standards Using Stored Ions," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 143-150.

J.J. Bollinger, D.J. Heinzen, W.M. Itano, S.L. Gilbert, and D.J. Wineland, "Test of the Linearity of Quantum Mechanics by rf Spectroscopy of the $^9Be^+$ Ground State," Phys. Rev. Lett., vol. 63, pp. 1031-1034, 1989.

S.L. Gilbert, J.C. Bergquist, J.J. Bollinger, W.M. Itano, and D.J. Wineland, "Liquid and Solid Phases of Laser Cooled Ions," in Atomic Physics 11, S. Haroche, J.C. Gay, G. Grynberg, eds. (World Scientific Press), pp. 261-275, 1989.

D.J. Wineland, W.M. Itano, J.C. Bergquist, and R.G. Hulet, "The Digitized Atom and Optical Pumping," in Atomic Physics II, S. Haroche, J.C. Gay, G. Grynberg, eds. (World Scientific Press), pp. 741, 1989.

D.J. Wineland, J.C. Bergquist, W.M. Itano, F. Diedrich, and C.S. Weimer, "Frequency Standards in the Optical Spectrum," in The Hydrogen Atom, G.F. Bassani, M. Inguscio, and T.W. Hansch, eds. (Springer Verlag), pp. 123-133, 1989.

D.J. Wineland, W.M. Itano, J.C. Bergquist, S.L. Gilbert, J.J. Bollinger, and F. Ascarrunz, "Liquid and Solid Ion Plasmas," in Non-neutral Plasma Physics, C.W. Roberson and C.F. Driscoll, eds. (AIP Conf. Proc. 175), pp. 93-110, 1989.

D.J. Wineland, W.M. Itano, J.C. Bergquist, and J.J. Bollinger, Eds., "Trapped Ions and Laser Cooling II," NIST Tech. Note 1324, pp. 1-185, 1989.

F. Diedrich, J.C. Bergquist, W. M. Itano, and D.J. Wineland, "Laser Cooling to the Zero Point Energy of Motion," Phys. Rev. Lett., vol. 62, pp. 403-406, 1989.

J.J. Bollinger, S.L. Gilbert, and D.J. Wineland, "Observation of Shell Structures with Ions Stored in Traps," Proc. Workshop on Crystalline Ion Beams, Wertheim, Germany, Oct. 4-7, 1989, pp. 231-240.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Coulomb Clusters of Ions in a Paul Trap," Proc. Workshop on Crystalline Ion Beams, Wertheim, Germany, Oct. 4-7, 1989, pp. 241-247.

J.C. Bergquist, F. Diedrich, W.M. Itano, and D.J. Wineland, "Hg^+ Single Ion Spectroscopy," Proc. 4th Symp. of Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, pp. 287-292.

D.J. Wineland, W.M. Itano, J.C. Bergquist, J.J. Bollinger, F. Diedrich, and S.L. Gilbert, "High Accuracy Spectroscopy of Stored Ions," Proc. 4th Symp. on Freq. Stand. and Metrology, A. DeMarchi, ed. (Springer Verlag) Ancona, Italy, Sept. 5-9, 1988, pp. 71-77.

J.J. Bollinger, S.L. Gilbert, W.M. Itano, and D.J. Wineland, "Frequency Standards Utilizing Penning Traps," Proc. 4th Symp. on Freq. Stand. and Metrology, A. DeMarchi, ed. (Springer-Verlag) Ancona, Italy, Sept. 5-9, 1988, pp. 319-325.

W.M. Itano, L.R. Brewer, D.J. Larson, J.J. Bollinger, S.L. Gilbert, and D.J. Wineland, "Quantitative Study of Laser Cooling in a Penning Trap," Proc. 4th Symp. on Freq. Stand. and Metrology, A. DeMarchi, ed. (Springer-Verlag) Ancona, Italy, Sept. 5-9, 1988, pp. 447-448.

W.M. Itano, L.R. Brewer, D.J. Larson, and D.J. Wineland, "Perpendicular Laser Cooling of Ion Plasmas in a Penning Trap," Phys. Rev. A, vol. 38, pp. 5698-5706, 1988.

J.J. Bollinger, D.J. Wineland, W.M. Itano, J.C. Bergquist, and J.D. Prestage, "Frequency and Time Standards Based on Stored Ions," Proc. 16th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1988, pp. 49-58.

W.M. Itano, J.C. Bergquist, R.G. Hulet, and D.J. Wineland, "Precise Optical Spectroscopy with Ion Traps," Physica Scripta, vol. T22, pp. 79-84, 1988.

D.J. Wineland, "Laser Cooling," Encyclopedia of Science and Technology (McGraw-Hill), 1988.

L.R. Brewer, J.D. Prestage, J.J. Bollinger, W.M. Itano, D.J. Larson, and D.J. Wineland, "Static Properties of a Non-neutral $^{9}Be^{+}$ Ion Plasma," Phys. Rev. A, vol. 38, pp. 859-873, 1988.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Photon Antibunching and Sub-Poissonian Statistics from Quantum Jumps in One and Two Atoms," Phys. Rev. A, vol. 38, pp. 559-562, 1988.

R.G. Hulet, D.J. Wineland, J.C. Bergquist, and W.M. Itano, "Precise Test of Quantum Jump Theory," Phys. Rev. A, vol. 37, pp. 4544-4547, 1988.

S.L. Gilbert, J.J. Bollinger, and D.J. Wineland, "Shell-Structure Phase of Magnetically Confined Strongly Coupled Plasmas," Phys. Rev. Lett., vol. 60, pp. 2022-2025, 1988.

R. Blatt, G. Lafyatis, W.D. Phillips, S. Stenholm, and D.J. Wineland, "Cooling in Traps," Physica Scripta T22, pp. 216-223, 1988.

D.J. Wineland, "Ion Traps for Large Storage Capacity," Proc. Cooling, Condensation, and Storage of Hydrogen Cluster Ions Workshop, 1987, pp. 181-194.

D.J. Wineland, J.C. Bergquist, W.M. Itano, J.J. Bollinger, and C.H. Manney, "Atomic-Ion Coulomb Clusters in an Ion Trap," Phys. Rev. Lett., vol. 59, pp. 2935-2938, 1987.

W.M. Itano, J.C. Bergquist, R.G. Hulet, and D.J. Wineland, "Radiative Decay Rates in Hg^{+} from Observations of Quantum Jumps in a Single Ion," Phys. Rev. Lett., vol. 59, pp. 2732-2735, 1987.

R.G. Hulet and D.J. Wineland, "Quantum Jumps via Spontaneous Raman Scattering," Phys. Rev. A., vol. 36, pp. 2758-2762, 1987.

D.J. Wineland, W.M. Itano, J.C. Bergquist, and R.G. Hulet, "Laser Cooling Limits and Single Ion Spectroscopy," Phys. Rev. A, vol. 36, pp. 2220-2232, 1987.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Laser Spectroscopy of Trapped Atomic Ions," Science, vol. 237, pp. 612-617, 1987.

W.M. Itano, J.C. Bergquist, R.G. Hulet, and D.J. Wineland, "The Observation of Quantum Jumps in Hg^{+}," Proc. 8th Int. Conf. on Laser Spectroscopy, Laser Spectroscopy VIII (Springer-Verlag), pp. 117-120, 1987.

J.C. Bergquist, W.M. Itano, and D.J. Wineland, "Recoilless Optical Absorption and Doppler Sidebands of a Single Trapped Ion," Phys. Rev. A, vol. 36, pp. 428-430, 1987.

J.J. Bollinger, L.R. Brewer, J.C. Bergquist, W.M. Itano, D.J. Larson, S.L. Gilbert, and D.J. Wineland, "Ion Trapping Techniques: Laser Cooling and Sympathetic Cooling," Proc. Workshop on Intense Positron Beams, Idaho Falls, ID, June 18-19, 1987, pp. 63-73.

D.J. Wineland and W.M. Itano, "Laser Cooling," Phys. Today, pp. 1-8, 1987.

D.J. Wineland, W.M. Itano, and J.C. Bergquist, "Absorption Spectroscopy at the Limit: Detection of a Single Atom," Opt. Lett., vol. 12, pp. 389-391, 1987.

E.C. Beaty, "Simple Electrodes for Quadrupole Ion Traps," J. Appl. Phys., vol. 61, pp. 2118-2122, 1987.

L.R. Brewer, J.D. Prestage, J.J. Bollinger, and D.J. Wineland, "A High Γ Strongly-Coupled, Non-neutral Ion Plasma Physics," in Strongly Coupled Plasmas, F.J. Rogers and H.E. DeWitt, eds. (Plenum Press), pp. 53-64, 1987.

J.C. Bergquist, R.G. Hulet, W.M. Itano, and D.J. Wineland, "Observation of Quantum Jumps in a Single Atom," Phys. Rev. Lett., vol. 57, pp. 1699-1702, 1986.

D.J. Larson, J.C. Bergquist, J.D. Bollinger, W.M. Itano, and D.J. Wineland, "Sympathetic Cooling of Trapped Ions: A Laser Cooled Two Species Non-neutral Ion Plasma," Phys. Rev. Lett., vol. 57, pp. 70-73, 1986.

J.C. Bergquist, D.J. Wineland, W.M. Itano, H. Hemmati, H.-U. Daniel, and G. Leuchs, "Doppler-Free Two-Photon Laser Spectroscopy of HgII," Proc. 39th Ann. Symp. Freq. Control, Philadelphia, PA, May 29-31, 1986, pp. 85-87.

J.D. Prestage, "Limits for Spatial Anisotropy," Phys. Bulletin, vol. 37, pp. 153-154, 1986.

D.J. Wineland, "Frequency Standards Based on Stored Ions," Proc. IEEE, vol. 74, 1986, pp. 147-150.

D.J. Wineland, W.M. Itano, J.C. Bergquist, J.J. Bollinger and J.D. Prestage, "Optical Pumping of Stored Atomic Ions," Ann. Phys. Fr., vol. 10, pp. 737-748, 1985.

D.J. Wineland, J.J. Bollinger, W.M. Itano, and J.D. Prestage, "Angular Momentum of Trapped Atomic Particles," J. Opt. Soc. Am. B, vol. 2, pp. 1721-1730, 1985.

J.C. Bergquist, D.J. Wineland, W.M. Itano, H. Hemmati, H.-U. Daniel, and G. Leuchs, "Energy and Radiative Lifetime of the $5d^9 6s^2 {}^2D_{5/2}$ State in HgII by Doppler-Free Two-Photon Laser Spectroscopy," Phys. Rev. Lett., vol. 55, pp. 1567-1570, 1985.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Measurements of the g_J Factors of the $6s^2{}_{1/2}$ and $6p^2P_{1/2}$," J. Opt. Soc. Am. B, vol. 2, pp. 1392-1394, 1985.

J.C. Bergquist, D.J. Wineland, W.M. Itano, H. Hemmati, H.-U. Daniel, and G. Leuchs, "Two-Photon Optical Spectroscopy of Trapped HgII," Laser Spectroscopy VII, T.W. Hansch and Y.R. Shen, eds. (Springer-Verlag), pp. 6-9, 1985.

J.D. Prestage, J.J. Bollinger, W.M. Itano, and D.J. Wineland, "Limits for Spatial Anisotropy by Use of Nucelar-Spin-Polarized $^9Be^+$ Ions," Phys. Rev. Lett., vol. 54, pp. 2387-2390, 1985.

D.J. Wineland, W.M. Itano, J.C. Bergquist, and J.J. Bollinger, eds., "Trapped Ions and Laser Cooling," NBS TN 1086, 1985.

J.J. Bollinger, J.S. Wells, D.J. Wineland, and W.M. Itano, "Hyperfine Structure of the $2p\ ^2P_{1/2}$ State in $^9Be^+$," Phys. Rev. A, vol. 31, pp. 2711-2714, 1985.

J.J. Bollinger, J.D. Prestage, W.M. Itano, and D.J. Wineland, "Laser-Cooled-Atomic Frequency Standard," Phys. Rev. Lett., vol. 54, pp. 1000-1003, 1985.

D.J. Wineland, "Trapped Ions, Laser Cooling, and Better Clocks," Science, vol. 226, pp. 395-400, 1984.

J.J. Bollinger and D.J. Wineland, "Strongly Coupled Non-neutral Ion Plasma," Phys. Rev. Lett., vol. 53, pp. 348-351, 1984.

D.J. Wineland, W.M. Itano, J.C. Bergquist, J.J. Bollinger, and J.D. Prestage, "Spectroscopy of Stored Atomic Ions," Proc. 9th Int. Conf. on Atomic Physics, 1984, pp. 3-27.

J.J. Bollinger, D.J. Wineland, and W.M. Itano, "Laser-Cooled Stored Ion Experiments Using Penning Traps," Proc. Int. Conf. on Lasers, 1984, pp. 727-730.

W.M. Itano, D.J. Wineland, J.C. Bergquist, and F.L. Walls, "Progress Toward a Stored Ion Frequency Standard at the National Bureau of Standards," Precision Measurement and Fundamental Constants II, B.N. Taylor and W.D. Phillips, eds., NBS SP 617, pp. 93-97, 1984.

D.J. Wineland, "Spectroscopy of Stored Ions," Precision Measurement and Fundamental Constants II, B.N. Taylor and W.D. Phillips, Eds., NBS SP 617, pp. 83-92, 1984.

J.J. Bollinger, W.M. Itano, and D.J. Wineland, "Laser Cooled $^9Be^+$ Accurate Clock," Proc. 37th Ann. Symp. Freq. Control, Philadelphia, PA, June 1-3, 1983, pp. 37-41.

H. Hemmati, J.C. Bergquist, and W.M. Itano, "Sum Frequency Generation of Narrowband cw 194 nm Radiation in Potassium Pentaborate," Laser Spectroscopy VI, Proc. 6th Int. Conf., H.P. Weber and W. Luthy, eds. (Springer-Verlag), pp. 414-415, 1983.

D.J. Wineland, W.M. Itano, J.C. Bergquist, J.J. Bollinger, and H. Hemmati, "Frequency Standard Research Using Stored Ions," Proc. Workshop on Spectroscopic Applications of Slow Atomic Beams, NBS Special Publication 653, 1983, pp. 19-26.

W.M. Itano, D.J. Wineland, H. Hemmati, J.C. Bergquist, and J.J. Bollinger, "Time and Frequency Standards Based on Charged Particle Trapping," IEEE Trans. Nucl. Sci., vol. 30, pp. 1521-1523, 1983.

D.J. Wineland, J.J. Bollinger, and W.M. Itano, "Laser-Fluorescence Mass Spectroscopy," Phys. Rev. Lett., vol. 50, pp. 628-631, 1983.

H. Hemmati, J.C. Bergquist, and W.M. Itano, "Generation of Continuous-Wave 194-nm Radiation by Sum-Frequency Mixing in an External Ring Cavity," Opt. Lett., vol. 8, pp. 73-75, 1983.

W.M. Itano, "Chemical Shift Correction to the Knight Shift in Beryllium," Phys. Rev. B, vol. 27, pp. 1906-1907, 1983.

D.J. Wineland, W.M. Itano, J.J. Bollinger, J.C. Bergquist, and H. Hemmati, "Spectroscopy of Stored Ions Using Fluorescence Techniques," SPIE, vol. 426, pp. 65-70, 1983.

D.J. Wineland, W.M. Itano, and R.S. Van Dyck, Jr., "High-Resolution Spectroscopy of Stored Ions," Adv. At. Mol. Phys., vol. 19, pp. 135-186, 1983.

W.M. Itano, L.L. Lewis, and D.J. Wineland, "Shift of $^2S_{1/2}$ Hyperfine Splittings due to Blackbody Radiation," Phys. Rev. A, vol. 25, pp. 1233-1235, 1982.

W.M. Itano and D.J. Wineland, "Laser Cooling of Ions Stored in Harmonic and Penning Traps," Phys. Rev. A, vol. 25, pp. 35-54, 1982.

L.L. Lewis, M. Feldman, and J.C. Bergquist, "Impact of Lasers on Primary Frequency Standards and Precision Spectroscopy," J. Phys. (Paris), vol. Colloque C8, pp. 271-281, 1981.

W.M. Itano, L.L. Lewis, and D.J. Wineland, "Shift of $^2S_{1/2}$ Hyperfine Splittings Due to Blackbody Radiation and Its Influence on Frequency Standards," J. Phys. (Paris), vol. Colloque C8, pp. 283-287, 1981.

D.J. Wineland, "Prospects for Stored Ion Frequency Standards," Proc. 13th Ann. PTTI Mtg., Washington, DC, Dec. 1-3, 1981, pp. 579-591.

D.J. Wineland, J.C. Bergquist, R.E. Drullinger, H. Hemmati, W.M. Itano and F.L. Walls, "Laser Cooled, Stored Ion Experiments at NBS and Possible Applications to Microwave and Optical Frequency Standards," J. Phys. (Paris), vol. Colloque C8, pp. 307-313, 1981.

W.M. Itano and D.J. Wineland, "Precision Measurement of the Ground-State Hyperfine Constant of $^{25}Mg^+$," Phys. Rev. A, vol. 24, pp. 1364-1373, 1981.

W.M. Itano and D.J. Wineland, "Laser Cooling and Double Resonance Spectroscopy of Stored Ions," Laser Spectroscopy V, A.R.W. McKellar, T. Oka, and B.P. Stoicheff, eds. (Springer-Verlag), pp. 360-368, 1981.

D.J. Wineland, W.M. Itano, J.C. Bergquist, and F.L. Walls, "Proposed Stored $^{201}Hg^+$ Ion Frequency Standards," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. 602-611.

D.J. Wineland and W.M. Itano, "Spectroscopy of a Single Mg^+ Ion," Phys. Lett., vol. 82A, pp. 75-78, 1981.

D.J. Wineland, J.C. Bergquist, W.M. Itano, and R.E. Drullinger, "Double-Resonance and Optical-Pumping Experiments on Electromagnetically Confined, Laser-Cooled Ions," Opt. Lett., vol. 5, pp. 245-247, 1980.

P. Ekstrom and D.J. Wineland, "The Isolated Electron," Sci. Am., vol. 243, pp. 105-121, 1980.

R.E. Drullinger, D.J. Wineland, and J.C. Bergquist, "High-Resolution Optical Spectra of Laser Cooled Ions," Appl. Phys., vol. 22, pp. 365-368, 1980.

F.L. Walls, "Prospects for Advances in Microwave Atomic Frequency Standards," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 619-640.

D.J. Wineland and W.M. Itano, "Laser Cooling of Atoms," Phys. Rev. A, vol. 20, pp. 1521-1540, 1979.

D.J. Wineland, "Laser-To-Microwave Frequency Division Using Synchrotron Radiation," J. Appl. Phys., vol. 50, pp. 2528-2532, 1979.

D.J. Wineland, "Limitations on Long-Term Stability and Accuracy in Atomic Clocks," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 81-110.

J.C. Bergquist and D.J. Wineland, "Laser to Microwave Frequency Division Using Synchrotron Radiation II," Proc. 33rd Ann. Symp. Freq. Control, Atlantic City, NJ, May 30-June 1, 1979, pp. 494-497.

H. Hellwig, K.M. Evenson, and D.J. Wineland, "Time, Frequency and Physical Measurement," Phys. Today, pp. 23-30, 1978.

D.J. Wineland, R.E. Drullinger, and F.L. Walls, "Radiation-Pressure Cooling of Bound Resonant Absorbers," Phys. Rev. Lett., vol. 40, pp. 1639-1642, 1978.

F.L. Walls, D.J. Wineland, and R.E. Drullinger, "New Possibilities for Frequency Standards Using Laser Cooling and Detection of Stored Ions," Proc. 32nd Ann. Symp. Freq. Control, Atlantic City, NJ, May 31-June 2, 1978, pp. 453-459.

F.L. Walls and G.H. Dunn, "Storing Ions For Collision Studies," Phys. Today, pp. 30-35, 1974.

F.L. Walls and G.H. Dunn, "Measurement of Total Cross Sections for Electron Recombination With NO^+ and O_2^+ Using Ion Storage Techniques," J. Geophys. Res., vol. 79, pp. 1911-1915, 1974.

F.L. Walls and T.S. Stein, "Observation of the g - 2 Resonance of a Stored Electron Gas Using a Bolometric Technique," Phys. Rev. Lett., vol. 31, pp. 975-979, 1973.

H. Hellwig, "The Ion Storage Technique for Application in Frequency Standards," NBS TN 388, 1970.

H.G. Dehmelt and F.L. Walls, ""Bolometric" Technique for the rf Spectroscopy of Stored Ions," Phys. Rev. Lett., vol. 21, pp. 127-131, 1968.

LASERS

L.R. Zink, G.P. Galvao, K.M. Evenson, and E.C.C. Vasconcellos, "Far Infrared Laser Frequencies of $^{13}CD_3OH$," J. Quant. Electron., vol. 30, pp. 1361-1362, 1994.

K.M. Evenson, C.C. Chou, B.W. Bach, and K.G. Bach, "New CW CO_2 Laser Lines: The 9 μm Hot Band," IEEE J. of Quantum Electron., vol. 30, pp. 1187-1188, 1994.

A.G. Maki, C.-C. Chou, K.M. Evenson, L.R. Zink, J.-T. Shy, "Improved Molecular Constants and Frequencies for the CO_2 Laser from New High-J Regular and Hot-Band Frequency Measurements," J. Mol. Spectrosc., vol. 167, pp. 211-224, 1994.

J.M. Brown, K.M. Evenson, and L.R. Zink, "Laser Magnetic Resonance Measurement of the $^3P_1$ - $^3P_2$ Fine Structure Splittings in ^{17}O and ^{18}O," Phys. Rev. A, vol. 48, pp. 3761-3763, 1993.

R.W. Fox, S.L. Gilbert, L. Hollberg, J.H. Marquardt, and H.G. Robinson, "Optical Probing of Cold Trapped Atoms," Opt. Lett., vol. 18, pp. 1456-1458, 1993.

N. Vansteenkiste, C. Gerz, R. Kaiser, L. Hollberg, C. Salomon, and A. Aspect, "A Frequency-Stabilized LNA Laser at 1.083 μm: Application to the Manipulation of Helium 4 Atoms," J. Phys. II France, vol. 1, pp. 1407-1428, 1991.

T. Nelis, S.P. Beaton, K.M. Evenson, and J. M. Brown, "A Determination of the Molecular Parameters for NiH in its $^2\Delta$ Ground State by Laser Magnetic Resonance," J. Mol. Spectrosc., vol. 148, pp. 462-478, 1991.

H.E. Radford, K.M. Evenson, F. Matushima, L.R. Zink, G.P. Galvao, and T.J. Sears, "Far Infrared Laser Frequencies of CH_3OD and N_2H_4," Int. J. Infrared Millimeter Waves, vol. 12, pp. 1161-1166, 1991.

J.C. Bergquist, W.M. Itano, D.J. Wineland, F. Diedrich, F. Elsner, and M.B. Raizen, "Single Ion Optical Frequency Standard," Proc. 45th Ann. Symp. Freq. Control, Los Angeles, CA, May 29-31, 1991, pp. 534-538.

K.V. Chance, K.M. Evenson, D.A. Jennings, M.D. Vanek, I.G. Nolt, J.V. Radostitz, and K. Park, "Pressure Broadening of the 118.455 cm^{-1} Rotational Lines of OH by H_2, He, N_2, and O_2," J. Mol. Spectrosc., vol. 146, pp. 375-380, 1991.

S.M. Corkery, J.M. Brown, S. Beaton, and K.M. Evenson, "Molecular Parameters of Chromium Hydride in its $X^6\Sigma^+$ State Determined by Far-Infrared Laser Magnetic Resonance Spectroscopy," J. Mol. Spectrosc., vol. 149, pp. 257-273, 1991.

M. Prevedelli, F.L. Walls, and S.P. Beaton, "High-Order Harmonic Mixing with GaAs Schottky Diodes," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 555-558.

D.J. Wineland, J.C. Bergquist, J.J. Bollinger, W.M, Itano, D.J. Heinzen, S.L. Gilbert, C.H. Manney, and M.G. Raizen, "Progress at NIST Toward Absolute Frequency Standards Using Stored Ions," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 37, pp. 515-523, 1990.

J.C. Bergquist, W.M. Itano, F. Elsner, M.G. Raizen, and D.J. Wineland, "Single Ion Optical Spectroscopy," Proc. Light Induced Kinetic Effects on Atoms, Ions and Molecules Workshop (LIKE), Elba Island, Italy, May 2-5, 1990, pp. 291-299.

E.C.C. Vasconcellos and K.M. Evenson, "Far Infrared Lasing Frequencies of CH_2DOD," Int. J. Infrared Millimeter Waves, vol. 11, pp. 785-789, 1990.

L. Hollberg, "CW Dye Lasers," Chapter 5 in Dye Laser Principles with Applications, F. Duarte and L. Hillman, eds. (Academic Press), pp. 185-238, 1990.

L.R. Zink, D.A. Jennings, K.M. Evenson, and K.R. Leopold, "Laboratory Measurements for the Astrophysical Identification of MgH," Astrophys. J., vol. 359, pp. L65-L66, 1990.

T. Nelis, J. Brown, and K.M. Evenson, "The Rotational Spectrum of the CH Radical in its $a^4\Sigma^-$ State, Studied by Far-Infrared Laser Magnetic Resonance," J. Chem. Physics, vol. 92, pp. 4067-4076, 1990.

S.P. Beaton and K.M. Evenson, "The Rotational Spectrum of Copper Hydride Using Tunable Far Infrared Radiation," J. Mol. Spectrosc., vol. 142, pp. 336-339, 1990.

M. Inguscio, L.R. Zink, K.M. Evenson, and D.A. Jennings, "Accurate Frequency of the 119 μm Methanol Laser from Tunable Far Infrared Absorption Spectroscopy," IEEE J. Quantum Electron., vol. 26, pp. 575-579, 1990.

J.C. Bergquist, F. Diedrich, W.M. Itano, and D.J. Wineland, "Hg^+ Single Ion Spectroscopy," Proc. 9th Int. Laser Spectroscopy Conf., Laser Spectroscopy IX, M.S. Feld, J.E. Thomas, and A. Mooradian, eds. (Academic Press), pp. 274-277, 1989.

M. Schneider, K.M. Evenson, M.D. Vanek, D.A. Jennings, J.S. Wells, A. Stahn, and W. Urban, "$^{12}C^{16}O$ Laser Frequency Tables for the 34.2 to 62.3 THz (1139 to 2079 cm^{-1}) Region," NBS TN 1321, 1989.

J.M. Brown and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CD Radical and Determination of Ground State Spectrum," J. Mol. Spectrosc., vol. 136, pp. 68-85, 1989.

G. Moruzzi, M. Prevedelli, K.M. Evenson, D.A. Jennings, M.D. Vanek, and M. Inguscio, "Ultrahigh Resolution Far-Infrared Spectroscopy of Methanol," Infrared Phys., vol. 29, pp. 541-549, 1989.

M. Schneider, K.M. Evenson, M.D. Vanek, D.A. Jennings, J.S. Wells, and W. Urban, "Laser Heterodyne Frequency Measurements of $^{12}C^{16}O$," J. Mol. Spectrosc., vol. 135, pp. 197-206, 1989.

J.M. Brown and K.M. Evenson, "The Far Infrared Laser Magnetic Resonance Spectrum of Vibrationally Excited C_2H," J. Mol. Spectrosc., vol. 131, pp. 161-171, 1988.

S.P. Beaton, K.M. Evenson, T. Nelis, and J.M. Brown, "Detection of the Free Radicals FeH, CoH, and NiH by Far Infrared Laser Magnetic Resonance," J. Chem. Phys., vol. 89, pp. 4446-4448, 1988.

J.C. Bergquist and S.Z. Xing, "Thermal Shifts of the Spectral Lines in the $^4F_{3/2}$ to $^4I_{11/2}$ Manifold of Nd:YAG Laser," IEEE J. Quantum Electron., vol. 24, pp. 1829-1832, 1988.

K.M. Evenson, D.A. Jennings, J.M. Brown, L.R. Zink, K.R. Leopold, M.D. Vanek, and I.G. Nolt, "Frequency Measurement of the J = 1 left → 0 Rotational Transition of HD," Astrophys. J., vol. 330, pp. L135-L136, 1988.

T. Nelis, J.M Brown, and K.M. Evenson, "The Spectroscopic Observation of the CH Radical in its $a^4\Sigma^-$ State," J. Chem. Phys., vol. 88, pp. 2087-2088, 1988.

J.M. Brown, D.A. Jennings, M. Vanek, L.R. Zink, and K.M. Evenson, "The Pure Rotational Spectrum of ArH^{+1}," J. Mol. Spectrosc., vol. 128, pp. 587-589, 1988.

K.M. Evenson, D.A. Jennings, and M.D. Vanek, "Tunable Far Infrared Laser Spectroscopy," Frontiers of Laser Spectroscopy of Gases, A.C.P. Alves, J.M. Brown, and J.M. Hollas, eds. (Kluwer Academic Publishers), vol. 234, pp. 43-51, 1988.

L.R. Zink, K.M. Evenson, D.A. Jennings, G. Moruzzi, and M. Inguscio, "Direct Frequency Measurement of the K=6 Asymmetry Splittings in CH_3OH," J. Mol. Spectrosc., vol. 127, pp. 44-50, 1988.

M. Inguscio, L.R. Zink, K.M. Evenson, and D. A. Jennings, "Sub-Doppler Tunable Far-Infrared Spectroscopy," Opt. Lett., vol. 12, pp. 867-869, 1987.

L.R. Zink, D.A. Jennings, K.M. Evenson, A. Sasso, and M. Inguscio, "Stark Spectroscopy Using Tunable Far Infrared Radiation," J. Opt. Soc. Am. B, vol. 4, pp. 1173-1176, 1987.

D.A. Jennings, K.M. Evenson, M.D. Vanek, I.G. Nolt, J.V. Radostitz, and K.V. Chance, "Air- and Oxygen-Broadening Coefficients for the O_2 Rotational Line at 60.46 cm^{-1}," Geophys. Res. Lett., vol. 14, pp. 722-725, 1987.

M. Schneider, A. Hinz, A. Groh, K.M. Evenson, and W. Urban, "CO Laser Optogalvanic Lamb-dip Stabilization from 5.0 to 6.3 μm on CO," Appl. Phys. B, vol. 44, pp. 241-245, 1987.

P. Zhao, W. Lichten, H. Layer, and J.C. Bergquist, "New Value for the Rydberg Constant from the Hydrogen Balmer-ß Transition," Phys. Rev. Lett., vol. 58, pp. 1293-1295, 1987.

I.G. Nolt, J.V. Radostitz, G. DiLonardo, K.M. Evenson, D.A. Jennings, K.R. Leopold, M.D. Vanek, L.R. Zink, A. Hinz, and K.V. Chance, "Accurate Rotational Constants of CO, HCl, and HF: Spectral Standard for the 0.3 to 6 THz (10 to 200 cm^{-1}) Region," J. Mol. Spectrosc., vol. 125, pp. 274-287, 1987.

D.A. Jennings, R.E. Drullinger, K.M. Evenson, C.R. Pollock, and J.S. Wells, "The Continuity of the Meter: The Redefinition of the Meter and the Speed of Visible Light," NBS JRES., vol. 92, pp. 11-16, 1987.

R.J. Saykally, K.M. Evenson, D.A. Jennings, L.R. Zink, and A. Scalabrin, "New FIR Laser Lines and Frequency Measurements for Optically Pumped CD_3OH," Int. J. Infrared Millimeter Waves, vol. 8, pp. 653-662, 1987.

D.A. Jennings, K.M. Evenson, L.R. Zink, C. Demuynck, J.C. Destombes, B. Lemoine, and J.W.C. Johns, "High Resolution Spectroscopy of HF from 40 to 1100 cm^{-1}: Highly Accurate Rotational Constants," J. Mol. Spectrosc., vol. 122, pp. 477-480, 1987.

K.R. Leopold, L.R. Zink, K.M. Evenson, and D.A. Jennings, "Far-Infrared Spectrum of Sodium Hydride," J. Mol. Spectrosc., vol. 122, pp. 150-156, 1987.

E.C.C. Vasconcellos, S.A. Davidson, J.M. Brown, K.R. Leopold, and K.M. Evenson, "Rotational and Hyperfine Constants of Vibrationally Excited NH($a^1\Delta$; $v=1$)," J. Mol. Spectrosc., vol. 122, pp. 242-245, 1987.

K.R. Leopold, K.M. Evenson, E.R. Comben, and J.M. Brown, "The Far Infrared Laser Magnetic Resonance ^{17}OH Radical: Determination of Nuclear Hyperfine Parameters," J. Mol. Spectrosc., vol. 122, pp. 440-454, 1987.

E.C.C. Vasconcellos, J. Wyss, and K.M. Evenson, "Frequency Measurements of Far Infrared $^{12}CH_3OH$ Laser Lines," Int. J. Infrared Millimeter Waves, vol. 8, pp. 647-651, 1987.

J.M. Brown, J.E. Schubert, R.J. Saykally, and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CF Radical and Determination of Ground State Parameters," J. Mol. Spectrosc., vol. 120, pp. 421-434, 1986.

M. Inguscio, G. Moruzzi, K.M. Evenson, and D.A. Jennings, "A Review of Frequency Measurements of Optically Pumped Lasers from 0.1 to 8 THz," J. Appl. Phys., vol. 60, pp. R161-R192, 1986.

P. Zhao, W. Lichten, H.P. Layer, and J.C. Bergquist, "Remeasurement of the Rydberg Constant," Phys. Rev. A, vol. 34, pp. 5138-5141, 1986.

K.V. Chance, I.G. Nolt, L. Zink, D.A. Jennings, K.M. Evenson, M.D. Vanek, and J.V. Radostitz, "Collisional Broadening of HCl Rotational Transitions Using Tunable Far-Infrared Radiation," Proc. 10th Int. Conf. on Infrared and Millimeter Waves, Giovanni Moruzzi, ed., Tirrenia, Italy, Oct. 20-24, 1986, pp. 277-279.

A.L. Cooksy, R.J. Saykally, J.M. Brown, and K.M. Evenson, "Accurate Determination of the Fine Structure Intervals in the ^3P Ground States of ^{13}C and ^{12}C by Far Infrared Laser Magnetic Resonance," Astrophys. J., vol. 309, pp. 828-832, 1986.

J.M. Brown, L.R. Zink, D.A. Jennings, K.M. Evenson, A. Hinz, and I.G. Nolt, "Laboratory Measurement of the Rotational Spectrum of the OH Radical with Tunable Far-Infrared Radiation," Astrophys. J., vol. 307, pp. 410-413, 1986.

K.R. Leopold, K.M. Evenson, and J.M. Brown, "Far Infrared Laser Magnetic Resonance Detection of NH and ND," J. Chem. Phys., vol. 85, pp. 324-330, 1986.

E.R. Comben, J.M. Brown, T.C. Steimle, K.R. Leopold, and K.M. Evenson, "The Microwave and Far-Infrared Spectra of the ^{18}OH Radical," Astrophys. J., vol. 305, pp. 513-517, 1986.

K.R. Leopold, L.R. Zink, K.M. Evenson, D.A. Jennings, and M. Mizushima, "The Far Infrared Spectrum of Magnesium Hydride," J. Chem. Phys., vol. 84(3), pp. 1935-1937, 1986.

R.J. Saykally, K.M. Evenson, E.R. Comben, and J.M. Brown, "Measurement of the Rotational Spectrum of Carbon Monoxide in its Metastable $a^3\Sigma$ State by Laser Magnetic Resonance," Mol. Phys., vol. 58, pp. 735-743, 1986.

J.M. Brown, J.E. Schubert, R.J. Saykally, and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CF Radical and Determination of Ground State Parameters," J. Mol. Spectrosc., vol. 120, pp. 421-434, 1986.

E.C.C. Vasconcellos, D.A. Jennings, and K.M. Evenson, "Frequency Measurement of the Solitary Ethyl Alcohol Laser Line," Int. J. Infrared Millimeter Waves, vol. 7, pp. 291-292, 1986.

D.A. Jennings, K.M. Evenson, and D.J.E. Knight, "Optical Frequency Measurements," Proc. Spec. Issue of IEEE, vol. 74, 1986, pp. 168-179.

J.M. Brown, K.M. Evenson, and Trevor J. Sears, "Infrared and Far-Infrared Laser Magnetic Resonance Spectroscopy of the GeH Radical: Determination of Ground State Parameters," J. Chem. Phys., vol. 83, pp. 3275-3284, 1985.

M. Inguscio, K.R. Leopold, J.S. Murray, and K.M. Evenson, "Laser-Magnetic-Resonance Detection of Magnesium Atoms in the Metastable $^3P_{0,1,2}$ States," J. Opt. Soc. Am. B, vol. 2, pp. 1566-1569, 1985.

K.M. Evenson, D.A. Jennings, K.R. Leopold, and L.R. Zink, "Tunable Far Infrared Spectroscopy," Laser Spectroscopy VII, Proc. 7th Int. Conf., Hawaii, June 24-28, 1985, T.W. Hansch and Y.R. Shen, eds. (Springer-Verlag), vol. 49, 1985, pp. 366-370.

J.M. Brown, R.F. Curl, and K.M. Evenson, "The Microwave and Far-Infrared Spectra of the SiH Radical," Astrophys. J., vol. 292, pp. 188-191, 1985.

D. Pereira, E.C.C. Vasconcellos, A. Scalabrin, K.M. Evenson, F.R. Petersen, and D.A. Jennings, "Measurements of New FIR Laser Lines in CD_3OD," Int. J. Infrared Millimeter Waves, vol. 6, pp. 877-882, 1985.

E.C.C. Vasconcellos and K.M. Evenson, "New Far Infrared Laser Lines Obtained by Optically Pumping $^{13}CD_3OD$," Int. J. Infrared Millimeter Waves, vol. 6, pp. 1157-1167, 1985.

M. Inguscio and K.M. Evenson, "Pressure Effects on the Frequency of Continuous-Wave Optically Pumped Far-Infrared Lasers," Opt. Lett., vol. 9, pp. 443-444, 1984.

J.M. Brown, R.F. Curl, and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the SiH Radical and Determination of Ground State Parameters," J. Chem. Phys., vol. 81, pp. 2884-2890, 1984.

J.C. Bergquist and L. Burkins, "Efficient Single Mode Operation of a cw Ring Dye Laser with a Mach-Zehnder Interferometer," Opt. Commun., vol. 50, pp. 379-385, 1984.

R.J. Saykally, L. Veseth, and K.M. Evenson, "Laser Magnetic Resonance Rotational Spectroscopy of $^2\Sigma$ Radicals: Ethynyl (CCH)," J. Chem. Phys., vol. 80(6), pp. 2247-2255, 1984.

K.M. Evenson, D.A. Jennings, and F.R. Petersen, "Tunable Far-Infrared Spectroscopy," Appl. Phys. Lett., vol. 44(6), pp. 576-578, 1984.

M. Inguscio, K.M. Evenson, V. Beltran-Lopez, and E. Ley-Koo, "The Direct Measurement of the 3^3P_0-3^3P_1 Fine-Structure Interval and the g_J-Factor of Atomic Silicon by Laser Magnetic Resonance," Astrophys. J., vol. 278, pp. L127-L130, 1984.

K.M. Evenson, T.J. Sears, and A.R.W. McKellar, "Far-Infrared Laser Magnetic Resonance of Vibrationally Excited CD_2," J. Opt. Soc. Am. B, vol. 1, pp. 15-21, 1984.

M. Mizushima, L.R. Zink, and K.M. Evenson, "Rotational Structure of $^{16}O_2$, $^{16}O^{17}O$, and $^{16}O^{18}O(X^3\Sigma_g^-)$ from Laser Magnetic Resonance Spectra," J. Mol. Spectrosc., vol. 107, pp. 395-404, 1984.

M. Inguscio, K.R. Leopold, J.M. Murray, and K.M. Evenson, "Far Infrared Laser Magnetic Resonance of Metastable (^{3}P) Mg," IR and MM Waves, Takarazuka, pp. 96-97, 1984.

J.C. Bergquist and H.-U. Daniel, "A Wideband Frequency-Offset-Locked Dye Laser Spectrometer Using a Schottky Barrier Mixer," Opt. Commun., vol. 48, pp. 327-333, 1984.

T.J. Sears, A.R.W. McKellar, P.R. Bunker, K.M. Evenson, and J.M. Brown, "Infrared and Far-Infrared Transition Frequencies for the CH_2 Radical," Astrophys. J., vol. 276, pp. 399-402, 1984.

A.R.W. McKellar, P.R. Bunker, T.J. Sears, K.M. Evenson, R.J. Saykally, and S.R. Langhoff, "Far Infrared Laser Magnetic Resonance of Singlet Methylene: Singlet-Triplet Perturbations, Singlet-Triplet Transitions, and the Singlet-Triplet Splitting," J. Chem. Phys., vol. 79, pp. 5251-5264, 1983.

H. Hemmati and J.C. Bergquist, "Generation of Continuous-Wave 243-nm Radiation by Sum-Frequency Mixing," Opt. Commun., vol. 47, pp. 157-160, 1983.

P.R. Bunker, T.J. Sears, A.R.W. McKellar, K.M. Evenson, and F.J. Lovas, "The Rotational Spectrum of the CD_2 Radical Studied by Far Infrared Laser Magnetic Resonance Spectroscopy," J. Chem. Phys., vol. 79, pp. 1211-1219, 1983.

K.M. Evenson and M. Inguscio, "Laser Magnetic Resonance Spectroscopy of Atoms," Laser Spectroscopy VI, Proc. 6th Int. Conf., H.P. Weber and W. Luthy, eds. (Springer-Verlag), pp. 80-81, 1983.

H. Hemmati, J.C. Bergquist, and W.M. Itano, "Sum Frequency Generation of N→band cw 194 nm Radiation in Potassium Pentaborate," Laser Spectroscopy VI, Proc. 6th Int. Conf., H.P. Weber and W. Luthy, eds. (Springer-Verlag), pp. 414-415, 1983.

J.M. Brown and K.M. Evenson, "The Microwave and Far-Infrared Spectra of the CH Radical," Astrophys. J., vol. 268, pp. L51-L56, 1983.

C.R. Pollock, D.A. Jennings, F.R. Petersen, J.S. Wells, R.E. Drullinger, E.C. Beaty and K.M. Evenson, "Direct Frequency Measurements of Transitions at 520 THz (576 nm) in Iodine and 260 THz (1.15 μm) in Neon," Opt. Lett., vol. 8, pp. 133-135, 1983.

D.A. Jennings, C.R. Pollock, F.R. Petersen, R.E. Drullinger, K.M. Evenson, J.S. Wells, J.L. Hall, and H.P. Layer, "Direct Frequency Measurement of the I_2-Stabilized He-Ne 473-THz (633-nm) Laser," Opt. Lett., vol. 8, pp. 136-138, 1983.

H. Hemmati, J.C. Bergquist, and W.M. Itano, "Generation of Continuous-Wave 194-nm Radiation by Sum-Frequency Mixing in an External Ring Cavity," Opt. Lett., vol. 8, pp. 73-75, 1983.

R.J. Saykally, K.G. Lubic, and K.M. Evenson, "Structures of Molecular Ions from Laser Magnetic Resonance Spectroscopy," Molecular Ions, J. Berkowitz and K.-O. Groeneveld, eds. (Plenum Press), pp. 33-52, 1983.

F.R. Petersen, E.C. Beaty, and C.R. Pollock, "Improved Rovibrational Constants and Frequency Tables for the Normal Laser Bands of $^{12}C^{16}O_2$," J. Mol. Spectrosc., vol. 102, pp. 112-122, 1983.

M. Mizushmima, K.M. Evenson, J.A. Mucha, D.A. Jennings, and J.M. Brown, "Laser Magnetic Resonance of the O_2 Molecule at 699 μm," J. Mol. Spectrosc., vol. 100, pp. 303-315, 1983.

E.C.C. Vasconcellos, J.C. Wyss, F.R. Petersen, and K.M. Evenson, "Frequency Measurements of Far Infrared cw Lasing Lines in Optically Pumped $CHCl_2F$," Int. J. Infrared Millimeter Waves, vol. 4, pp. 401-406, 1983.

J.M. Brown and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CH Radical and Determination of Ground-State Parameters," J. Mol. Spectrosc., vol. 98, pp. 392-403, 1983.

T.J. Sears, P.R. Bunker, A.R.W. McKellar, K.M. Evenson, D.A. Jennings, and J.M. Brown, "The Rotational Spectrum and Hyperfine Structure of the Methylene Radical CH_2 Studied by Far-Infrared Laser Magnetic Resonance Spectroscopy," J. Chem. Phys., vol. 77, pp. 5348-5362, 1982.

J.M. Brown, J.E. Schubert, K.M. Evenson, and H.E. Radford, "The Far-Infrared Spectrum of the OH Radical," Astrophys. J., vol. 258, pp. 899-903, 1982.

R.J. Saykally, K.G. Lubic, A. Scalabrin, and K.M. Evenson, "The Pure Rotational Spectrum and Hyperfine Structure of CF Studied by Laser Magnetic Resonance," J. Chem. Phys., vol. 77, pp. 58-67, 1982.

H. Hemmati, J.C. Bergquist, and W.M. Itano, "Sum Frequency Generation of CW 194 nm Radiation in Potassium Pentaborate," Proc. 6th Int. Conf. on Laser Spectroscopy (SICOLS), 1982, pp. 485-490.

L.L. Lewis, M. Feldman, and J.C. Bergquist, "Impact of Lasers on Primary Frequency Standards and Precision Spectroscopy," J. Phys. (Paris), vol. Colloque C8, pp. 271-281, 1981.

W. Gellermann, F. Luty, and C.R. Pollock, "Optical Properties and Stable, Broadly Tunable cw Laser Operation of New F-Type Centers in Tl^+-Doped Alkali Halides," Opt. Commun., vol. 39, pp. 391-395, 1981.

K.M. Evenson, "Laser Frequency Measurements and the Redefinition of the Meter," Laser Focus, vol. 17, pp. 61-63, 1981.

R.E. Drullinger, "Increased Gain Through Identification and Alleviation of Dye Self Absorption in Laser Pumped Dye Lasers," Opt. Commun., vol. 39, pp. 263-264, 1981.

R.S. McDowell, C.W. Patterson, N.G. Nereson, F.R. Petersen, and J.S. Wells, "CO_2 Laser Coincidences with ν_3 of SiF_4 Near 9.7 μm," Opt. Lett., vol. 6, pp. 422-424, 1981.

H.E. Radford, K.M. Evenson, and D.A. Jennings, "Far-Infrared LMR Detection of Hydroxymethyl," Chem. Phys. Lett., vol. 78, pp. 589-591, 1981.

R.L. Barger, "Influence of Second-Order Doppler Effect on Optical Ramsey Fringe Profiles," Opt. Lett., vol. 6, pp. 145-147, 1981.

E.C.C. Vasconcellos, A. Scalabrin, F.R. Petersen, and K.M. Evenson, "New FIR Laser Lines and Frequency Measurements in CD_3OD," Int. J. Infrared Millimeter Waves, vol. 2, pp. 533-539, 1981.

E.C.C. Vasconcellos, F.R. Petersen, and K.M. Evenson, "Frequencies and Wavelengths from a New, Efficient FIR Lasing Gas: CD_2F_2," Int. J. Infrared Millimeter Waves, vol. 2, pp. 705-711, 1981.

K.M. Evenson, "Far-Infrared Laser Magnetic Resonance," Faraday Discussions of The Royal Society of Chemistry, vol. 71, pp. 7-14, 1981.

J.M. Brown, C.M.L. Kerr, F.D. Wayne, K.M. Evenson, and H.E. Radford, "The Far-Infrared Laser Magnetic Resonance Spectrum of the OH Radical," J. Mol. Spectrosc., vol. 86, pp. 544-554, 1981.

A. Scalabrin, R.J. Saykally, K.M. Evenson, H.E. Radford and M. Mizushima, "Laser Magnetic Resonance Measurement of Rotational Transitions in the Metastable $a^1\Delta_g$ State of Oxygen," J. Mol. Spectrosc., vol. 89, pp. 344-351, 1981.

R.L. Barger, "Simple Interferometric Technique for Allignment of Segmented Retroreflectors," Appl. Opt., vol. 19, pp. 2088-2089, 1980.

R.J. Saykally and K.M. Evenson, "Direct Measurement of Fine Structure in the Ground State of Atomic Carbon by Laser Magnetic Resonance," Astrophys. J., vol. 238, pp. L107-L111, 1980.

F.R. Petersen, K.M. Evenson, D.A. Jennings, and A. Scalabrin, "New Frequency Measurements and Laser Lines of Optically Pumped $^{12}CH_3OH$," IEEE J. Quantum Electron., vol. 16, pp. 319-323, 1980.

K.M. Evenson, R.J. Saykally, D.A. Jennings, R.F. Curl, and J.M. Brown, "Far Infrared Laser Magnetic Resonance," Chemical and Biochemical Applications of Lasers, C. Bradley Moore, ed. (Academic Press), pp. 95-138, 1980.

F.R. Petersen, A. Scalabrin, and K.M. Evenson, "Frequencies of cw Fir Laser Lines from Optically Pumped CH_2F_2," Int. J. Infrared Millimeter Waves, vol. 1, pp. 111-115, 1980.

A. Scalabrin, F.R. Petersen, K.M. Evenson, and D.A. Jennings, "Optically Pumped cw CH_2DOH Fir Laser: New Lines and Frequency Measurements," Int. J. Infrared Millimeter Waves, vol. 1, pp. 117-126, 1980.

B.E. Warner, K.B. Persson, and G.J. Collins, "Metal-Vapor Production by Sputtering in a Hollow-Cathode Discharge: Theory and Experiment," J. Appl. Phys., vol. 50, pp. 5694-5703, 1979.

A. Scalabrin and K.M. Evenson, "Additional cw FIR Laser Lines from Optically Pumped CH_2F_2," Opt. Lett., vol. 4, pp. 277-279, 1979.

D.A. Jennings, F.R. Petersen, and K.M. Evenson, "Frequency Measurement of the 260-THz (1.15 μm) He-Ne Laser," Opt. Lett., vol. 4, pp. 129, 1979.

G.E. Streit, J.S. Wells, F.C. Fehsenfeld, and C.J. Howard, "A Tunable Diode Laser Study of the Reactions of Nitric and Nitrous Acids: HNO_3+NO and HNO_2+O_3," J. Chem. Phys., vol. 70, pp. 3439-3443, 1979.

W.G. Harter, H.P. Layer, and F.R. Petersen, "Evidence of Tumbling Multiplets in Saturation Absorption Spectra of SiF_4," Opt. Lett., vol. 4, pp. 90-92, 1979.

R.J. Saykally and K.M. Evenson, "Observation of Pure Rotational Transitions in the HBr^+ Molecular Ion by Laser Magnetic Resonance," Phys. Rev. Lett., vol. 43, pp. 515, 1979.

D.A. Jennings, F.R. Petersen, and K.M. Evenson, "Direct Frequency Measurement of the ^{20}Ne Laser at the 260 THz (1.15 μm): and Beyond," Proc. Laser Spectroscopy IV (Springer-Verlag), 1979.

J.O. Henningsen, J.G. Petersen, F.R. Petersen, D.A. Jennings, and K.M. Evenson, "High Resolution Spectroscopy of Vibrationally Excited $^{13}CH_3OH$ by Frequency Measurement of FIR Laser Emission," J. Mol. Spectrosc., vol. 77, 1979, pp. 298-309.

D.J. Wineland, "Limitations on Long-Term Stability and Accuracy in Atomic Clocks," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 81-110.

M. Inguscio, F. Strumia, K.M. Evenson, D.A. Jennings, A. Scalabrin, and S.R. Stein, "Far-Infrared CH_3F Stark Laser," Opt. Lett., vol. 4, pp. 9-11, 1979.

B.E. Warner, D.C. Gerstenberger, R.D. Reid, J.R. McNeil, R. Solanki, K.B. Persson, and G.J. Collins, "1 W Operation of Singly Ionized Silver and Copper Lasers," IEEE J. Quantum Electron., vol. 14, pp. 568-570, 1978.

R.E. Drullinger and M. Stock, "The CD^*_2 Excimer: Fluorescence Band Shape and Decay Rates," J. Chem. Phys., vol. 68, pp. 5299-5300, 1978.

L.K. Lam, A. Gallagher, and R.E. Drullinger, "Measurement of HgXe Excimer Potentials," J. Chem. Phy., vol. 68, pp. 4411-4416, 1978.

M. Stock, E.W. Smith, R.E. Drullinger, and M.M. Hessel, "Relaxation of the First Excited 1_u State of Hg_2," J. Chem. Phys., vol. 68, pp. 4167-4175, 1978.

M. Stock, E.W. Smith, R.E. Drullinger, M.M. Hessel, and J. Pourcin, "Analysis of the Decay of Molecular Fluorescence in Optically Excited Mercury Vapor," J. Chem. Phys., vol. 68, pp. 1785-1793, 1978.

J. Munch, M.A. Kolpin, and J. Levine, "Frequency Stability and Stabilization of a Chemical Laser," IEEE J. Quantum Electron., vol. 14, pp. 17-22, 1978.

J.T. Hougen, J.A. Mucha, D.A. Jennings, and K.M. Evenson, "Far-Infrared Laser Magnetic Resonance Spectrum of CH," J. Mol. Spectrosc., vol. 72, pp. 463-483, 1978.

M. Stock, E.W. Smith, R.E. Drullinger, and M.M. Hessel, "Relaxation of the Mercury 6^3P_0 and 6^3P_1 States," J. Chem. Phys., vol. 67, pp. 2463-2469, 1977.

W.J. Stevens, M. Gardner, A. Karo, and P. Julienne, "Theoretical Determination of Bound-Free Absorption Cross Sections in Ar^+_2," J. Chem. Phys., vol. 67, pp. 2860-2867, 1977.

W.J. Stevens and M. Krauss, "The Electronic Structure of the Ground and Excited States of Mg^+_2 and Mg_2," J. Chem. Phys., vol. 67, pp. 1977-1989, 1977.

F.J. de Hoog, J.R. McNeil, G.J. Collins, and K.B. Persson, "Discharge Studies of the Ne-Cu Laser," J. Appl. Phys., vol. 48, pp. 3701-3704, 1977.

S.R. Stein, A.S. Risley, H. Van de Stadt, and F. Strumia, "High Speed Frequency Modulation of Far Infrared Lasers Using the Stark Effect," Appl. Opt., vol. 16, pp. 1893-1896, 1977.

E.W. Smith, R.E. Drullinger, M.M. Hessel, and J. Cooper, "A Theoretical Analysis of Mercury Molecules," J. Chem. Phys., vol. 66, pp. 5667-7001, 1977.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "Experimental Studies of Mercury Molecules," J. Chem. Phys., vol. 66, pp. 5656-5666, 1977.

K.M. Evenson, D.A. Jennings, F.R. Petersen, J.A. Mucha, J.J. Jimenez, R.M. Charlton, and C.J. Howard, "Optically Pumped FIR Lasers: Frequency and Power Measurements and Laser Magnetic Resonance Spectroscopy," IEEE J. Quantum Electron., vol. 13, pp. 442-444, 1977.

S.R. Stein and H. van de Stadt, "Electronic Tuning and Phase-Lock Techniques for Optically Pumped Far Infrared Lasers," Proc. 31st Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 1-3, 1977, pp. 601-604.

H.E. Radford, F.R. Petersen, D.A. Jennings, and J.A. Mucha, "Heterodyne Measurements of Submillimeter Laser Spectrometer Frequencies," IEEE J. Quantum Electron., pp. 92-94, 1977.

W.J. Stevens, M.M. Hessel, P.J. Bertoncini, and A.C. Wahl, "Theoretical Transition Dipole Moments and Lifetimes for the $A^1\Sigma^+_u \rightarrow X^1\Sigma^+_g$ System of Na_2," J. Chem. Phys., vol. 66, pp. 1477-1482, 1977.

M. Stock, R.E. Drullinger, and M.M. Hessel, "Comparison Between Electron Beam and Optically Produced Mercury Excimer Fluorescence," Chem. Phys. Lett., vol. 45, pp. 592-594, 1977.

K.M. Evenson, D.A. Jennings, F.R. Petersen, and J.S. Wells, "Laser Frequency Measurements: A Review, Limitations, Extension to 197 THz (1.5 μm)," Laser Spectroscopy III, J.L. Hall and J.L. Carlsten, eds. (Springer-Verlag), vol. 7, pp. 56-68, 1977.

J.A. Mucha, D.A. Jennings, K.M. Evenson, and J.T. Hougen, "Far-Infrared Laser Magnetic Resonance Spectrum of CH_2F," J. Mol. Spectrosc., vol. 68, pp. 122-124, 1977.

J.S. Wells, G.E. Streit, and F.R. Petersen, "Absolute Spin-Flip Raman Laser Frequency Measurements with Metal-Insulator-Metal Diodes," Opt. Commun., vol. 19, pp. 248-252, 1976.

J.R. McNeil, W.L. Johnson, G.J. Collins, and K.B. Persson, "Ultraviolet Laser Action in He-Ag and Ne-Ag Mixtures," Appl. Phys. Lett., vol. 29, pp. 172-174, 1976.

W.L. Johnson, J.R. McNeil, G.J. Collins, and K.B. Persson, "CW Laser Action in the Blue-Green Spectral Region from Ag II," Appl. Phys. Lett., vol. 29, pp. 101-102, 1976.

H. Hellwig, P. Tomingas, and S. Werthman, eds., "Copper Mountain Conf.," Proc. 2nd Freq. Stand. and Metrology Symp., Copper Mountain, CO, July 5-7, 1976, pp. 1-698.

J.M. Cook, K.M. Evenson, C.J. Howard, and R.F. Curl, Jr., "Laser Magnetic Resonance Spectrum of HCO on the D_2O 108 μm Laser Line," J. Chem. Phys., vol. 64, pp. 1381-1388, 1976.

F.B. Haller, M.M. Hessel, W. Neef, W. Lai, and H. Lohr, "Concentric Heat Pipe Cavity for E-Beam Excited Lasers," Proc. 6th Symp. on Engineering Problems of Fusion Research, 1976, pp. 79-83.

K.M. Evenson and F.R. Petersen, "Laser Frequency Measurements, the Speed of Light, and the Meter," Spectroscopy of Atoms and Molecules, H. Walther, ed. (Springer-Verlag), vol. 2, pp. 349-368, 1976.

J.A. Davidson, C.M. Sadowski, H.I. Schiff, G.E. Streit, C.J. Howard, D.A. Jennings, and A.L. Schmeltekopf, "Absolute Rate Constant Determinations for the Deactivation of O^1D) by Time Resolved Decay of $O(^1D)$-$0(^3P)$ Emission," J. Chem. Phys., vol. 64, pp. 57-62, 1976.

R.L. Barger, T.C. English, and J.B. West, "Rydberg Constant Measurement Using cw Dye Laser and H* Atomic Beam," Atomic Masses and Fundamental Constants, vol. 5, J.H. Sanders and A.H. Wapstra, eds. (Plenum Press), pp. 565-570, 1976.

J.S. Wells, F.R. Petersen, G.E. Streit, P.D. Goldan, and C.M. Sadowski, "An Infrared Spectrometer Utilizing A Spin Flip Raman Laser, IR Frequency Synthesis Techniques, and CO_2 Laser Frequency Standards," NBS TN 670, 1976.

F.R. Petersen, K.M Evenson, D.A. Jennings, J.S. Wells, K. Goto, and J.J. Jimenez, "Far Infrared Frequency Synthesis with Stabilized CO_2 Lasers: Accurate Measurements of the Water Vapor and Methyl Alcohol Laser Frequencies," IEEE J. Quantum Electron., vol. 11, pp. 838-843, 1975.

K.M. Evenson, "The Development of Direct Optical Frequency Measurement and the Speed of Light," Instrum. Soc. Am., vol. 14, pp. 209-216, 1975.

L. Tomuta, M. Mizushima, C.J. Howard, and K.M. Evenson, "Rotational Structure and Magnetic g Factors of $O_2(X^3\Sigma_g^-, \mu = 0)$ from Laser-Magnetic-Resonance Spectra," Phys. Rev. A, vol. 12, pp. 974-979, 1975.

D.A. Jennings, K.M. Evenson, and J.J. Jimenez, "New CO_2 Pumped CW Far-Infrared Laser Lines," IEEE J. Quantum Electron., pp. 637, 1975.

R.L. Barger, J.B. West, and T.C. English, "Fast Frequency Stabilization of a cw Dye Laser," Appl. Phys. Lett., vol. 27, pp. 31-33, 1975.

D.A. Jennings, F.R. Petersen, and K.M. Evenson, "Extension of Absolute Frequency Measurements to 148 THz: Frequencies of the 2.0- and 3.5-μm Xe Laser," Appl. Phys. Lett., vol. 26, pp. 510-511, 1975.

J.T. Hougen, H.E. Radford, K.M. Evenson, and C.J. Howard, "Analysis of the Laser Magnetic Resonance Spectrum of HO_2," J. Mol. Spectrosc., vol. 56, pp. 210-228, 1975.

K.M. Evenson, F.R. Petersen, and J.S. Wells, "Speed of Light from Direct Laser Frequency and Wavelength Measurements: Emergence of a Laser Standard of Length," Laser Spectroscopy (Plenum Press), pp. 143-156, 1975.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "Analysis of Optically Excited Mercury Molecules," NBS MN 143, 1975.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "New Laser Measurement Techniques for Excited Electronic States of Diatomic Molecules," Proc. Megeve Laser Spectroscopy Conf., 1975, pp. 91-99.

M.M. Hessel, E.W. Smith, and R.E. Drullinger, "Transition Dipole Moment of Na_2 and Its Variation with Internuclear Distance," Phys. Rev. Lett., vol. 33, pp. 1251-1254, 1974.

K.M. Evenson, "Frequency Measurements in the Optical Region and the Speed of Light," Proc. ICO Conf. on Optical Methods in Scientific and Industrial Measurements, 1974, pp. 1-10.

E. Sakuma and K.M. Evenson, "Characteristics of Tungsten-Nickel Point Contact Diodes Used as Laser Harmonic-Generator Mixers," IEEE J. Quantum Electron., vol. 10, pp. 599-603, 1974.

J.C. Stephenson and E.R. Mosburg, Jr., "Vibrational Energy Transfer in CO from 100 to 300 K," J. Chem. Phys., vol. 60, pp. 3562-3566, 1974.

H.E. Radford, K.M. Evenson, and C.J. Howard, "HO_2 Detected by Laser Magnetic Resonance," J. Chem. Phys., vol. 60, pp. 3178-3183, 1974.

J.S. Wells, D.G. McDonald, A.S. Risley, S. Jarvis, and J.D. Cupp, "Spectral Analysis of a Phase Locked Laser at 891 GHz, an Application of Josephson Junctions in the Far Infrared," Revue de Physique Appliquée, pp. 285-292, 1974.

H. Hellwig, H.E. Bell, J.C. Bergquist, D.J. Glaze, D.A. Howe, S. Jarvis, Jr., A.E. Wainwright, and F.L. Walls, "Results in Operation, Research and Development of Atomic Clocks at the National Bureau of Standards," Proc. Int. Congress of Chronometry (CIC), 1974, pp. 1-13.

K.M. Evenson, J.S. Wells, F.R. Petersen, B.L. Danielson, and G.W. Day, "Accurate Frequencies of Molecular Transitions Used in Laser Stabilization: The 3.39-μm Transition in CH_4 and the 9.33- and 10.18-μm Transitions," Appl. Phys. Lett., vol. 22, pp. 192-193, 1973.

R.A. Keller, J.D. Simmons, and D.A. Jennings, "Enhancement of Absorption Spectra by Dye-Laser Quenching, III: Quantitative Aspects and a Comparison of Flash-Lamp-Pumped and cw Systems under High Resolution," J. Opt. Soc. Am., vol. 63, pp. 1552-1555, 1973.

T. Tanaka, A.D. English, R.W. Field, D.A. Jennings, and D.O. Harris, "Microwave Optical Double Resonance of NO_2 with a Tunable cw Dye Laser," J. Chem. Phys., vol. 59, pp. 5217-5218, 1973.

D.A. Jennings, W. Braun, and H.P. Broida, "Vibrational Relaxation of Hydrogen by Direct Detection of Electronic and Vibrational Energy Transfer with Alkali Metals," J. Chem. Phys., vol. 59, pp. 4305-4308, 1973.

R.E. Drullinger and R.N. Zare, "Optical Pumping of Molecules II. Relaxation Studies," J. Chem. Phys., vol. 59, pp. 4225-4234, 1973.

E.R. Mosburg, Jr., "A Study of the CW 28-μm Water-Vapor Laser," IEEE J. Quantum Electron., vol. 9, pp. 843-851, 1973.

J.S. Wells, "A Stabilized HCN Laser for Infrared Frequency Synthesis," IEEE Trans. Instrum. Meas., vol. 22, pp. 113-118, 1973.

R.L. Barger, M.S. Sorem, and J.L. Hall, "Frequency Stabilization of a cw Dye Laser," Appl. Phys. Lett., vol. 22, pp. 573-575, 1973.

M.M. Hessel and T.B. Lucatorto, "The Rotating Heat-Pipe Oven; A Universal Device for the Containment of Atomic and Molecular Vapors," Rev. Sci. Instrum., vol. 44, pp. 561-563, 1973.

P. Kartaschoff and S. Jarvis, Jr., "Notes on Infrared Absorption Experiments in a Methane Molecular Beam," NBSIR 73-312, pp. 1-28, 1973.

R.L. Barger and J.L. Hall, "Wavelength of the 3.39 μm Laser-Saturated Absorption Line of Methane," Appl. Phys. Lett., vol. 22, pp. 196-199, 1973.

K.M. Evenson, "Comparing Frequencies," Phys. Today, vol. 26, pp. 15, 1973.

J. Levine and R.T. Stebbins, "Ultra Sensitive Laser Interferometers and Their Application to Problems of Geophysical Interest," Philos. Trans. R. Soc. London, Ser. A, vol. 274, pp. 279-284, 1973.

K.M. Evenson, J.S. Wells, F.R. Petersen, B.L. Danielson, G.W. Day, R.L. Barger, and J.L. Hall, "Speed of Light from Direct Frequency and Wavelength Measurements of the Methane-Stabilized Laser," Phys. Rev. Lett., vol. 29, pp. 1346-1348, 1972.

J.C. Bergquist and H. Hellwig, "Performance of He-Ne Lasers with Various He and Ne Pressures and Various Capillary Sizes," NBS Report 10 761, pp. 1-17, 1972.

M. Mizushima, J.S Wells, K.M. Evenson, and W.M. Welch, "Laser Magnetic Resonance of the O_2 Molecule Using the 337-μm HCN Laser," Phys. Rev. Lett., vol. 29, pp. 831-833, 1972.

C.R. Vidal and M.M. Hessel, "Heat-Pipe Oven for Homogeneous Mixtures of Saturated and Unsaturated Vapors; Application to NaLi," J. Appl. Phys., vol. 43, pp. 2776-2780, 1972.

R.F. Curl, Jr., K.M. Evenson and J.S. Wells, "Laser Magnetic Resonance Spectrum of NO_2 at 337 μm and 311 μm," J. Chem. Phys., vol. 56, pp. 5143-5151, 1972.

M. Mizushima, K.M. Evenson, and J.S. Wells, "Laser Magnetic Resonance of the NO Molecule Using 78-, 79-, and 119-μm H_2O Laser Lines," Phys. Rev. A, vol. 5, pp. 2276-2287, 1972.

J. Levine and R. Stebbins, "Upper Limit on the Gravitational Flux Reaching the Earth from the Crab Pulsar," Phys. Rev. D, vol. 5, pp. 1465-1468, 1972.

K.M. Evenson, G.W. Day, J.S. Wells, and L.O. Mullen, "Extension of Absolute Frequency Measurements to the cw He-Ne Laser at 88 THz (3.39 μm)," Appl. Phys. Lett., vol. 20, pp. 133-134, 1972.

H. Hellwig, H.E. Bell, P. Kartaschoff, and J.C. Bergquist, "Frequency Stability of Methane-Stabilized He-Ne Lasers," J Appl. Phys., vol. 43, pp. 450-452, 1972.

D.A. Jennings and R.A. Keller, "Detection of Trace Amounts of Sodium by Fluorescence Emission Excited by a Continuous Wave Organic Dye Laser," J. Am. Chem. Soc., vol. 94, pp. 9249, 1972.

D.A. Jennings and A.J. Varga, "Efficient Second Harmonic Generation in ADP with Two New Fluorescein Dye Lasers," J. Appl. Phys., vol. 42, pp. 5171-5172, 1971.

K.M. Evenson, H.E. Radford, and M.M. Moran, Jr., "CH Free Radicals Detected by Infrared Laser Magnetic Resonance," Appl. Phys. Lett., vol. 18, pp. 426-427, 1971.

K.M. Evenson, J.S. Wells, L.M. Matarrese, and D.A. Jennings, "Variable Output-Coupling Far-Infrared Michelson Laser," J. Appl. Phys., vol. 42, pp. 1233-1234, 1971.

L.M. Matarrese and K.M. Evenson, "Improved Coupling to Infrared Whisker Diodes by Use of Antenna Theory," Appl. Phys. Lett., vol. 17, pp. 8-10, 1970.

D.A. Jennings and E.D. West, "A Laser Power Meter for Large Beams," Rev. Sci. Instrum., vol. 41, pp. 565-567, 1970.

K.M. Evenson, J.S. Wells, and L.M. Matarrese, "Absolute Frequency Measurements of the CO_2 cw Laser at 28 THz (10.6 μm)," Appl. Phys. Lett., vol. 16, pp. 251-253, 1970.

K.M. Evenson, J.S. Wells, L.M. Matarrese, and L.B. Elwell, "Absolute Frequency Measurements of the 28- and 78-μm cw Water Vapor Laser Lines," Appl. Phys. Lett., vol. 16, pp. 159-161, 1970.

J.S. Wells and K.M. Evenson, "A New LEPR Spectrometer," Rev. Sci. Instrum., vol. 41, pp. 226-227, 1970.

E.D. West and D.A. Jennings, "Power Measurements of Large Laser Beams with a Small Dual-Cone Calorimeter," Rev. Sci. Instrum., vol. 41, pp. 142, 1970.

K.M. Evenson, J.S. Wells, and L.M. Matarrese, "Defining the Speed of Light: A Combination Time, Frequency, and Length Standard: Recent Progress Toward Measuring the Frequency of Visible Light," Proc. Int. Conf. on Precision Measurements and Fundamental Constants (PMFC), 1970, pp. 67-69.

D.A. Jennings, E.D. West, K.M. Evenson, A.L. Rasmussen, and W.R. Simmons, "Laser Power and Energy Measurements," NBS TN 382, 1969.

D.A. Jennings, K.M. Evenson, W.R. Simmons, and A.L. Rasmussen, "Laser Energy, Power, and Frequency Measurements," Electron Technology, pp. 149-158, 1969.

K.M. Evenson, H.P. Broida, J.S. Wells, R.J. Mahler, and M. Mizushima, "Electron Paramagnetic Resonance Absorption in Oxygen with the HCN Laser," Phys. Rev. Lett., vol. 21, pp. 1038-1040, 1968.

D.A. Jennings, "Calorimetric Measurement of Pulsed Laser Output Energy," IEEE Trans. Instrum. Meas., vol. 15, pp. 161-164, 1966.

S.L. Shapiro, M. McClintock, D.A. Jennings, and R.L. Barger, "Brillouin Scattering in Liquids at 4880 Å," IEEE Trans. Quantum Electron., vol. 2, pp. 89-93, 1966.

H.P. Broida, K.M. Evenson, and T.T. Kikuchi, "Comments on the Mechanism of the 337-Micron CN Laser," J. Appl. Phys., vol. 36, pp. 3335, 1965.

H. Takuma and D.A. Jennings, "Characteristics of a Raman Laser Excited by an Ordinary Ruby Laser," Proc. IEEE, vol. 53, 1965, pp. 146-149.

D.A. Jennings and H. Takuma, "Optical Heterodyne Detection of the Forward-Stimulated Brillouin Scattering," Appl. Phys. Lett., vol. 5, pp. 241-242, 1964.

H. Takuma and D.A. Jennings, "Stimulated Brillouin Scattering in the Off-Axis Resonator," Appl. Phys. Lett., vol. 5, pp. 239-241, 1964.

H. Takuma and D.A. Jennings, "Coherent Raman Effect in the Off-Axis Raman Laser Resonator," Appl. Phys. Lett., vol. 4, pp. 185-186, 1964.

J.L. Hall, D.A. Jennings, and R.M. McClintock, "Study of Anthracene Fluorescence Excited by the Ruby Giant-Pulse Laser," Phys. Rev. Lett., vol. 11, pp. 364-366, 1963.

D.A. Jennings, R.M. McClintock, and J.E. Drumheller, "Two Photon Excitation in Phenanthrene:Anthracene," NBS Report 7626, pp. 1-9, 1962.

LENGTH/SPEED OF LIGHT

P. Zhao, W. Lichten, Z.-X. Zhou, H.P. Layer, and J.C. Bergquist, "Rydberg Constant and Fundamental Atomic Physics," Phys. Rev. A., vol. 39, pp. 2888-2898, 1989.

P. Zhao, W. Lichten, H. Layer, and J.C. Bergquist, "New Value for the Rydberg Constant from the Hydrogen Balmer-ß Transition," Phys. Rev. Lett., vol. 58, pp. 1293-1295, 1987.

D.A. Jennings, R.E. Drullinger, K.M. Evenson, C.R. Pollock, and J.S. Wells, "The Continuity of the Meter: The Redefinition of the Meter and the Speed of Visible Light," NBS JRES., vol. 92, pp. 11-16, 1987.

P. Zhao, W. Lichten, H.P. Layer, and J.C. Bergquist, "Remeasurement of the Rydberg Constant," Phys. Rev. A, vol. 34, pp. 5138-5141, 1986.

D.A. Jennings, K.M. Evenson, and D.J.E. Knight, "Optical Frequency Measurements," Proc. Spec. Issue of IEEE, vol. 74, 1986, pp. 168-179.

D.A. Jennings, C.R. Pollock, F.R. Petersen, R.E. Drullinger, K.M. Evenson, J.S. Wells, J.L. Hall, and H.P. Layer, "Direct Frequency Measurement of the I_2-Stabilized He-Ne 473-THz (633-nm) Laser," Opt. Lett., vol. 8, pp. 136-138, 1983.

K.M. Evenson, "Laser Frequency Measurements and the Redefinition of the Meter," Laser Focus, vol. 17, pp. 61-63, 1981.

K.M. Baird, K.M. Evenson, G.R. Hanes, D.A. Jennings, and F.R. Petersen, "Extension of Absolute-Frequency Measurements to the Visible: Frequencies of Ten Hyperfine Components of Iodine," Opt. Lett., vol. 4, pp. 263-264, 1979.

R.L. Barger, J.C. Bergquist, T.C. English, and D.J. Glaze, "Resolution of Photon-Recoil Structure of the 6573-Å Calcium Line in an Atomic Beam with Optical Ramsey Fringes," Appl. Phys. Lett., vol. 34, pp. 850-852, 1979.

J.C. Bergquist, R.L. Barger, and D.J. Glaze, "High Resolution Spectroscopy of Calcium Atoms," Proc. 4th Int. Conf. on Laser Spectroscopy (FICOLS), 1979, pp. 120-129.

H. Hellwig, K.M. Evenson, and D.J. Wineland, "Time, Frequency and Physical Measurement," Phys. Today, pp. 23-30, 1978.

K.M. Evenson and F.R. Petersen, "Laser Frequency Measurements, the Speed of Light, and the Meter," Spectroscopy of Atoms and Molecules, H. Walther, ed. (Springer-Verlag), vol. 2, pp. 349-368, 1976.

R.L. Barger, T.C. English, and J.B. West, "Rydberg Constant Measurement Using cw Dye Laser and H* Atomic Beam," Atomic Masses and Fundamental Constants, vol. 5, J.H. Sanders and A.H. Wapstra, eds. (Plenum Press), pp. 565-570, 1976.

K.M. Evenson, "The Development of Direct Optical Frequency Measurement and the Speed of Light," Instrum. Soc. Am., vol. 14, pp. 209-216, 1975.

K.M. Evenson, F.R. Petersen, and J.S. Wells, "Speed of Light from Direct Laser Frequency and Wavelength Measurements: Emergence of a Laser Standard of Length," Laser Spectroscopy (Plenum Press), pp. 143-156, 1975.

K.M. Evenson, "Frequency Measurements in the Optical Region and the Speed of Light," Proc. ICO Conf. on Optical Methods in Scientific and Industrial Measurements, 1974, pp. 1-10.

R.L. Barger and J.L. Hall, "Wavelength of the 3.39 μm Laser-Saturated Absorption Line of Methane," Appl. Phys. Lett., vol. 22, pp. 196-199, 1973.

K.M. Evenson, J.S. Wells, F.R. Petersen, B.L. Danielson, G.W. Day, R.L. Barger, and J.L. Hall, "Speed of Light from Direct Frequency and Wavelength Measurements of the Methane-Stabilized Laser," Phys. Rev. Lett., vol. 29, pp. 1346-1348, 1972.

D. Halford, H. Hellwig, and J.S. Wells, "Progress and Feasibility for a Unified Standard for Frequency, Time, and Length," Proc. IEEE, vol. 60, 1972, pp. 623-625.

J.S. Wells, K.M. Evenson, G.W. Day, and D. Halford, "Role of Infrared Frequency Synthesis in Metrology," Proc. IEEE, vol. 60, 1972, pp. 621-623.

K.M. Evenson, G.W. Day, J.S. Wells, and L.O. Mullen, "Extension of Absolute Frequency Measurements to the cw He-Ne Laser at 88 THz (3.39 μm)," Appl. Phys. Lett., vol. 20, pp. 133-134, 1972.

H. Hellwig and D. Halford, "Accurate Frequency Measurements: Survey, Significance, and Forecast," Proc. Int. Conf., 1971, pp. 17-25.

K.M. Evenson, J.S. Wells, and L.M. Matarrese, "Defining the Speed of Light: A Combination Time, Frequency, and Length Standard: Recent Progress Toward Measuring the Frequency of Visible Light," Proc. Int. Conf. on Precision Measurements and Fundamental Constants (PMFC), 1970, pp. 67-69.

A.V. Astin, "Standards of Measurement," Sci. Am., vol. 218, pp. 50-62, 1968.

G.E. Hudson and W. Atkinson, "The Redefinition of the Second and the Velocity of Light," Phys. Today, vol. 16, pp. 30-32, 1963.

MEASUREMENT METHODS

A. Dax, J.S. Wells, L. Hollberg, A.G. Maki, and W. Urban, "Sub-Doppler Frequency Measurements on OCS at 87 THz (3.4 μm) with the CO Overtone Laser: Considerations and Details," NIST Tech. Note 1365, pp. 1-25, 1994.

T.D. Varberg, K.M. Evenson, and J.M. Brown, "Detection of OH+ in its a^1 State by Far Infrared Laser Magnetic Resonance," J. Chem. Phys., vol. 100, pp. 2487-2491, 1994.

F.L. Walls, "Practical Standards for PM and AM Noise at 5, 10, and 100 MHz," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 189-198.

D.J. Wineland, J.J. Bollinger, W.M. Itano, F.L. Moore, and D.J. Heinzen, "Spin Squeezing and Reduced Quantum Noise in Spectroscopy," Phys. Rev. Lett., vol. 46, pp. 6797-6800, 1992.

F.L. Walls, "Frequency Calibration Standard Using a Wide Band Phase Modulator," United States Patent No. 5,101,506, 1992.

A.G. Maki and J.S. Wells, "Wavenumber Calibration Tables from Heterodyne Frequency Measurements," NIST SP 821, 1991.

F.L. Walls, A.J.D. Clements, C.M. Felton, and T.D. Martin, "Precision Phase Noise Metrology," Proc. National Conf. of Standards Laboratories (NCSL), Albuquerque, NM, Aug., 1991, pp. 257-275.

D.W. Allan, "Time and Frequency Metrology: Current Status and Future Considerations," Proc. 5th European Freq. and Time Forum, Bescanson, France, Mar. 13-15, 1991, pp. 1-9.

F.L. Walls, "Method and Apparatus for Wide Band Phase Modulation," United States Patent 4,968,908, 1990.

G. Kamas and M.A. Lombardi, "Time and Frequency Users Manual," NBS SP 559 (Revised), 1990.

G.M. Tino, L. Hollberg, A. Sasso, M. Inguscio, and M. Barsanti, "Hyperfine Structure of the Metastable $^5S_2$ State of ^{17}O Using an AlGaAs Diode Laser at 777 nm," Phys. Rev. Lett., vol. 64, pp. 2999-3002, 1990.

L.R. Zink, P. De Natale, F.S. Pavone, M. Prevedelli, K.M. Evenson, and M. Inguscio, "Rotational Far Infrared Spectrum of $^{13}CO^1$," J. Mol. Spectrosc., vol. 143, pp. 304-310, 1990.

D.B. Sullivan, D.W. Allan, D.A. Howe, and F.L. Walls, "Characterization of Clocks and Oscillators," NIST Tech. Note 1337, pp. 1-342, 1990.

F.L. Walls, C.M. Felton, A.J.D. Clements, and T.D. Martin, "Accuracy Model for Phase Noise Measurements," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 295-310.

D.A. Jennings, "Coherent Tunable Far Infrared Radiation," Appl. Phys. B, vol. 48, pp. 311-313, 1989.

F.L. Walls, A.J.D. Clements, C.M. Felton, M.A. Lombardi, and M.D. Vanek, "Extending the Range and Accuracy of Phase Noise Measurements," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 432-441.

K.M. Evenson, D.A. Jennings, and M.D. Vanek, "Tunable Far Infrared Laser Spectroscopy," Frontiers of Laser Spectroscopy of Gases, A.C.P. Alves, J.M. Brown, and J.M. Hollas, eds. (Kluwer Academic Publishers), vol. 234, pp. 43-51, 1988.

M. Inguscio, L.R. Zink, K.M. Evenson, and D. A. Jennings, "Sub-Doppler Tunable Far-Infrared Spectroscopy," Opt. Lett., vol. 12, pp. 867-869, 1987.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Laser Spectroscopy of Trapped Atomic Ions," Science, vol. 237, pp. 612-617, 1987.

D.J. Wineland, W.M. Itano, and J.C. Bergquist, "Absorption Spectroscopy at the Limit: Detection of a Single Atom," Opt. Lett., vol. 12, pp. 389-391, 1987.

K.M. Evenson, D.A. Jennings, L.R. Zink, and K.R. Leopold, "Tunable Far Infrared Laser Spectroscopy," Proc. 11th Int. Conf. on Infrared and Millimeter Waves, G. Moruzzi, ed. (ETS Editrice), Tirrenia, Pisa, Oct. 20-24, 1986, pp. 267-271.

F.L. Walls, "Precise Phase Noise Measurements of Oscillators," Proc. 8th Quartz Devices Conf. and Exhibition, Kansas City, MO, Aug. 26-28, 1986, pp. 143-158.

F.L. Walls and D.W. Allan, "Measurements of Frequency Stability," Proc. IEEE, vol. 74, 1986, pp. 162-168.

K.M. Evenson, D.A. Jennings, K.R. Leopold, and L.R. Zink, "Tunable Far Infrared Spectroscopy," Laser Spectroscopy VII, Proc. 7th Int. Conf., Hawaii, June 24-28, 1985, T.W. Hansch and Y.R. Shen, eds. (Springer-Verlag), vol. 49, 1985, pp. 366-370.

K.M. Evenson, M. Inguscio, and D.A. Jennings, "Point Contact Diode at Laser Frequencies," J. Appl. Phys., vol. 57(3), pp. 956-960, 1985.

K.M. Evenson, D.A. Jennings, and F.R. Petersen, "Tunable Far-Infrared Spectroscopy," Appl. Phys. Lett., vol. 44(6), pp. 576-578, 1984.

J.C. Bergquist and H.-U. Daniel, "A Wideband Frequency-Offset-Locked Dye Laser Spectrometer Using a Schottky Barrier Mixer," Opt. Commun., vol. 48, pp. 327-333, 1984.

K.M. Evenson, D.A. Jennings, F.R. Petersen, J.S. Wells, and R.E. Drullinger, "Optical Frequency Synthesis Spectroscopy," Prog. Quant. Electr., vol. 8, pp. 143-151, 1984.

D.J. Glaze and S.R. Stein, "Picosecond Time Difference Measurements Utilizing CAMAC-Based ANSI/IEEE-488 Data Acquisition Hardware, Operating Manual IE3, Version 1.0," NBS TN 1056, 1983.

K.M. Evenson and M. Inguscio, "Laser Magnetic Resonance Spectroscopy of Atoms," Laser Spectroscopy VI, Proc. 6th Int. Conf., H.P. Weber and W. Luthy, eds. (Springer-Verlag), 1983, pp. 80-81.

S. Stein, D. Glaze, J. Levine, J. Gray, D. Hilliard, D. Howe, and L.A. Erb, "Automated High-Accuracy Phase Measurement System," IEEE Trans. Instrum. Meas., vol. 32, pp. 227-231, 1983.

D.J. Wineland, J.J. Bollinger, and W.M. Itano, "Laser-Fluorescence Mass Spectroscopy," Phys. Rev. Lett., vol. 50, pp. 628-631, 1983.

R.J. Saykally, K.G. Lubic, and K.M. Evenson, "Structures of Molecular Ions from Laser Magnetic Resonance Spectroscopy," Molecular Ions, J. Berkowitz and K.-O. Groeneveld, eds. (Plenum Publishing), pp. 33-52, 1983.

D.J. Wineland, W.M. Itano, J.J. Bollinger, J.C. Bergquist, and H. Hemmati, "Spectroscopy of Stored Ions Using Fluorescence Techniques," Society of Photo-Optical Instrumentation Engineers (SPIE), vol. 426, pp. 65-70, 1983.

D.J. Wineland, W.M. Itano, and R.S. Van Dyck, Jr., "High-Resolution Spectroscopy of Stored Ions," Adv. At. Mol. Phys., vol. 19, pp. 135-186, 1983.

S. Stein, D. Glaze, J. Levine, J. Gray, D. Hilliard, D. Howe, and L.Erb, "Performance of an Automated High Accuracy Phase Measurement System," Proc. 36th Ann. Symp. Freq. Control, Philadelphia, PA, June 2-4, 1982, pp. 314-320.

W.M. Itano and D.J. Wineland, "Laser Cooling and Double Resonance Spectroscopy of Stored Ions," Laser Spectroscopy V, A.R.W. McKellar, T. Oka, and B.P. Stoicheff, eds. (Springer-Verlag), pp. 360-368, 1981.

D.A. Howe, D.W. Allan, and J.A. Barnes, "Properties of Signal Sources and Measurement Methods," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. A1-A47.

D.J. Wineland, J.C. Bergquist, W.M. Itano, and R.E. Drullinger, "Double-Resonance and Optical-Pumping Experiments on Electromagnetically Confined, Laser-Cooled Ions," Opt. Lett., vol. 5, pp. 245-247, 1980.

E.W. Smith, R.E. Drullinger, M.M. Hessel, and J. Cooper, "A Theoretical Analysis of Mercury Molecules," J. Chem. Phys., vol. 66, pp. 5667-7001, 1977.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "Experimental Studies of Mercury Molecules," J. Chem. Phys., vol. 66, pp. 5656-5666, 1977.

K.M. Evenson, D.A. Jennings, F.R. Petersen, J.A. Mucha, J.J. Jimenez, R.M. Charlton, and C.J. Howard, "Optically Pumped FIR Lasers: Frequency and Power Measurements and Laser Magnetic Resonance Spectroscopy," IEEE J. Quantum Electron., vol. 13, pp. 442-444, 1977.

F.L. Walls and S.R. Stein, "Accurate Measurements of Spectral Density of Phase Noise in Devices," Proc. 31st Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 1-3, 1977, pp. 335-343.

J.E. Gray, "Clock Synchronization and Comparison: Problems, Techniques and Hardware," NBS TN 691, 1976.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

S.R. Stein, "An NBS Phase Noise Measurement System Built for Frequency Domain Measurements Associated with the Global Positioning System," NBSIR 76-846, pp. 1-11, 1976.

F.L. Walls, "New Horizons and Old Pitfalls in Frequency and Time Metrology," Proc. 2nd Freq. Stand. and Metrology Symp., 1976, pp. 489-517.

J.J. Gagnepain, "Fundamental Noise Studies of Quartz Crystal Resonators," Proc. 30th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 2-4, 1976, pp. 84-91.

F.L. Walls, S.R. Stein, J.E. Gray, and D.J. Glaze, "Design Considerations in State-of-the-Art Signal Processing and Phase Noise Measurement Systems," Proc. 30th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 2-4, 1976, pp. 269-274.

J.S. Wells, G.E. Streit, and F.R. Petersen, "Application of Infrared Frequency Synthesis Techniques With Metal-Insulator-Metal Diodes to the Spin Flip Raman Laser," NBS TN 680, 1976.

D.A. Howe, "Frequency Domain Stability Measurements: A Tutorial Introduction," NBS TN 679, 1976.

D.W. Allan, "Report on NBS Dual Mixer Time Difference System (DMTD) Built for Time-Domain Measurements Associated with Phase 1 of GPS," NBSIR 75-827, pp. 1-18, 1976.

D.W. Allan, "The Measurement of Frequency and Frequency Stability of Precision Oscillators," NBS TN 669, 1975.

M.M. Hessel, R.E. Drullinger, and H.P. Broida, "Chemiluminescent Reactions in a Heat-Pipe Oven," J. Appl. Phys., vol. 46, pp. 2317-2318, 1975.

D.W. Allan, "Picosecond Time Difference Measurement System," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 404-411.

D.W. Allan, "The Measurement of Frequency and Frequency Stability of Precision Oscillators," NBS TN 669, 1975.

F.L. Walls and A.E. Wainwright, "Measurement of the Short-Term Stability of Quartz Crystal Resonators and the Implications for Crystal Oscillator Design and Applications," IEEE Trans. Instrum. Meas., vol. 24, pp. 15-20, 1975.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "Analysis of Optically Excited Mercury Molecules," NBS MN 143, 1975.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "New Laser Measurement Techniques for Excited Electronic States of Diatomic Molecules," Proc. Megeve Laser Spectroscopy Conf., 1975, pp. 91-99.

M.M. Hessel, E.W. Smith, and R.E. Drullinger, "Transition Dipole Moment of Na_2 and Its Variation with Internuclear Distance," Phys. Rev. Lett., vol. 33, pp. 1251-1254, 1974.

J.H. Shoaf, "Specification and Measurement of Frequency Stability," NBSIR 74-396, pp. 1-40, 1974.

J.E. Gray and D.W. Allan, "A Method for Estimating the Frequency Stability of an Individual Oscillator," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 243-246.

A.E. Wainwright, F.L. Walls, and W.D. McCaa, "Direct Measurements of the Inherent Frequency Stability of Quartz Crystal Resonators," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 177-179.

R.E. Drullinger and R.N. Zare, "Optical Pumping of Molecules II. Relaxation Studies," J. Chem. Phys., vol. 59, pp. 4225-4234, 1973.

D.W. Allan, J.H. Shoaf, and D. Halford, "Statistics of Time and Frequency Data Analysis," Chapter 8, from Characterization of Frequency Stability, pp. 151-204, 1973.

J.H. Shoaf, D. Halford, and A.S. Risley, "Frequency Stability Specification and Measurement: High Frequency and Microwave Signals," NBS TN 632, 1973.

J.T. Stanley, "The Uses and Limitations of HF Standard Broadcasts for Time and Frequency Comparison," Proc. 4th Ann. PTTI Mtg., Greenbelt, MD, Nov. 14-16, 1972, pp. 249-258.

J.T. Stanley and J.B. Milton, "Basic Laboratory Methods for Measurement or Comparison of Frequencies and Time Intervals," NBS Report 10 744, pp. 1-131, 1972.

H. Hellwig and D. Halford, "Accurate Frequency Measurements: Survey, Significance, and Forecast," Proc. Int. Conf., 1971, pp. 17-25.

J.A. Barnes, A.R. Chi, L.S. Cutler, D.J. Healey, D.B. Leeson, T.E. McGunigal, J.A. Mullen, Jr., W.L. Smith, R.L. Sydnor, R.F.C. Vessot, and G.M.R. Winkler, "Characterization of Frequency Stability," IEEE Tran. Instrum. Meas., vol. 20, pp. 105-120, 1971.

J.A. Barnes, A.R. Chi, L.S. Cutler, D.J. Healey, D.B. Leeson, T.E. McGunigal, J.A. Mullen, W.L. Smith, R. Sydnor, R.F.C. Vessot, and G.M.R. Winkler, "Characterization of Frequency Stability," NBS TN 394, 1970.

J.A. Barnes and R.C. Mockler, "The Power Spectrum and Its Importance in Precise Frequency Measurments," IRE Trans. Instrum., vol. 9, pp. 149-155, 1960.

MISCELLANEOUS

W.M. Itano, "Retrieving Articles from the Internet (Without a UNIX Workstation), Part I: File Formats and Software Tools," Opt. Photon. News, vol. 5, pp. 61,67, 1994.

W.M. Itano, "Retrieving Articles from the Internet (Without a UNIX Workstation) Part II: An Example," Opt. Photonics News, vol. 5, pp. 36,43, 1994.

W.M. Itano, "Getting Started on Mosiac," Opt. Photonics News, vol. 5, pp. 48-49, 1994.

C.M. Volk and J. Levine, "Analytical Estimation of Carrier Multipath Bias on GPS Position Measurements," NIST Tech. Note 1366, pp. 1-60, 1994.

J.M. Gilligan, "How To Find Files on the INTERNET with Archie," Optics and Photonics News, vol. 3, pp. 61-64, 1992.

W. Itano, "Obtaining and Installing a Public Domain TEX," Optics and Photonics News, pp. 42, 1991.

M.G. Raizen and B. Rosenstein, "Comment on "Non-linear Magneto-Optics of Vacuum: Second Harmonic Generation,"" Phys. Rev. Lett., vol. 65, pp. 2744, 1990.

F.L. Walls, "Analysis of High Performance Compensated Thermal Enclosures," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1987, pp. 439-443.

J. Levine, "Automatically Running Command Files at Any Future Time," RSX Multi-Tasker, vol. 2, pp. 6-10, 1986.

J. Levine, "Recovering Files From a Damaged Files-11 Disk," RSX MULTITASKER, pp. 19-30, 1985.

H.J. Liebe, V.L. Wolfe, and D.A. Howe, "Test of Wall Coatings for Controlled Moist Air Experiments," Rev. Sci. Instrum., vol. 55, pp. 1702-1705, 1984.

R. Stamm and E.W. Smith, "Computer Simulation Technique for Plasmas," Phys. Rev. A, vol. 30, pp. 450-453, 1984.

E.W. Smith, R. Stamm, and J. Cooper, "Discussion of the Conditional-Probability Function for Electric Fields in a Plasma," Phys. Rev. A, vol. 30, pp. 454-467, 1984.

E.N. Fortson and L.L. Lewis, "Atomic Parity Nonconservation Experiments," Phys. Reports, vol. 113, pp. 289-344, 1984.

E.W. Smith, "Absorption and Dispersion in the O_2 Microwave Spectrum at Atmospheric Pressures," J. Chem. Phys., vol. 74, pp. 6658-6673, 1981.

J.H. Hollister, G.R. Apperson, L.L. Lewis, T.P. Emmons, T.G. Vold, and E.N. Fortson, "Measurement of Parity Nonconservation in Atomic Bismuth," Phys. Rev. Lett., vol. 46, pp. 643-646, 1981.

E.W. Smith, B. Talin, and J. Cooper, "An Analysis of Markovian Model Microfield Methods for Stark Broadening," J. Quant. Spectros. Radiat. Transfer, vol. 26, pp. 229-242, 1981.

J.A. Barnes, H.H. Sargent III, and P.V. Tryon, "Sunspot Cycle Simulation Using a Narrowband Gaussian Process," NBS TN 1022, 1980.

J.A. Barnes, H.H. Sargent III, and P.V. Tryon, "Sunspot Cycle Simulation Using Random Noise," Proc. Conf. of Ancient Sun, 1980, pp. 159-163.

P. Ekstrom and D.J. Wineland, "The Isolated Electron," Sci. Am., vol. 243, pp. 105-121, 1980.

E.W. Smith and M. Giraud, "Temperature Dependence of Rotational Linewidths in HCl Perturbed by Argon," J. Chem. Phys., vol. 70, pp. 2027-2028, 1979.

J.A. Barnes, "Letter to the Editor," Sci. Am., vol. 66, pp. 662, 1978.

E.R. Mosburg, Jr. and M.D. Wilke, "Some New Transition Probabilities for Mercury I," J. Quant. Spectros. Radiat. Transfer, vol. 19, pp. 69-81, 1978.

J. Cooper, R.J. Ballagh, and E.W. Smith, "Collisional Redistribution of Radiation in the Non-Impact Region of Spectral Lines," ACTA Phys. Pol., vol. A54, pp. 729-733, 1978.

P. Kusch and M.M. Hessel, "An Analysis of the $A^1\Sigma_\mu^+$ -$X^1\Sigma_g^+$ Band System of $^7Li_2$," J. Chem. Phys., vol. 67, pp. 586-589, 1977.

L.K. Lam, A. Gallagher, and M.M. Hessel, "The Intensity Distribution in the Na_2 and Li_2 A-X Bands," J. Chem. Phys., vol. 66, pp. 3550-3556, 1977.

S.E. Moody and M. Lambropoulos, "ac Stark Effect in Multiphoton Ionization," Phys. Rev. A, vol. 15, pp. 1497-1501, 1977.

J.B. West and H.M. Poland, "Chemiluminescence from Mixtures of Ba+CO_2 and Ba+CO," J. Chem. Phys., vol. 66, pp. 2139-2141, 1977.

E.W. Smith and M. Giraud, "Calculations of Rotational Linewidths in HCl Perturbed by Argon," J. Chem. Phys., vol. 66, pp. 1762-1764, 1977.

P.P. Viezbicke, "Yagi Antenna Design," NBS TN 688, 1976.

E.W. Smith, M. Giraud, and J. Cooper, "A Semiclassical Theory for Spectral Line Broadening in Molecules," J. Chem. Phys., vol. 65, pp. 1256-1267, 1976.

R.A. Heppner, F.L. Walls, W.T. Armstrong, and G.H. Dunn, "Cross-Section Measurements for Electron-H_3O^+ Recombination," Phys. Rev. A, vol. 13, pp. 1000-1011, 1976.

P.S. Julienne, M. Krauss, and W. Stevens, "Collision-Induced O^1D_2-$^1S_0$ Emission near 5577Å in Argon," Chem. Phys. Lett., vol. 38, pp. 374-381, 1976.

Y. Beers and C.J. Howard, "The Spectrum of DO_2 Near 60 GHz and the Structure of the Hydroperoxyl Radical," J. Chem. Phys., vol. 64, pp. 1541-1543, 1976.

R.V. Pound, W.T. Vetterling, C.J.A. Penny, H.M. Smith, G.A. Wilkins, D.W. Allan, A.G. Mungall, G.M.R. Winkler, W.H. Cannon, and O.G. Jensen, "Acceleration and Clocks," Science, vol. 191, pp. 489-491, 1976.

B.L. Danielson and Y. Beers, "Laser Attenuators for the Production of Low Power Beams in the Visible and 1.06 μm Regions," NBS TN 677, 1976.

P. Kusch and M.M. Hessel, "Perturbations in the $A^1\Sigma^+_\mu$ State of Na_2," J. Chem. Phys., vol. 63, pp. 4087-4088, 1975.

M.M. Hessel, R.E. Drullinger, and H.P. Broida, "Chemiluminescent Reactions in a Heat-Pipe Oven," J. Appl. Phys., vol. 46, pp. 2317-2318, 1975.

D.A. Jennings, "Simple, Adjustable Lens Holder," Rev. Sci. Instrum., vol. 46, pp. 487-488, 1975.

Y. Beers, "The Theory of the Optical Wedge Beam Splitter," NBS MN 146, 1974.

F.L. Walls and G.H. Dunn, "Storing Ions For Collision Studies," Phys. Today, pp. 30-35, 1974.

D. Mihalas, A.J. Barnard, J. Cooper, and E.W. Smith, "HeIλ4471 Profiles in B Stars: Calculations with an Improved Line—Broadening Theory," Astrophys. J., vol. 190, pp. 315-318, 1974.

F.L. Walls and G.H. Dunn, "Measurement of Total Cross Sections for Electron Recombination With NO^+ and O_2^+ Using Ion Storage Techniques," J. Geophys. Res., vol. 79, pp. 1911-1915, 1974.

J. Ward, J. Cooper, and E.W. Smith, "Correlation Effects in the Theory of Combined Doppler and Pressure Broadening--I. Classical Theory," J. Quant. Spectros. Radiat. Transfer, vol. 14, pp. 555-590, 1974.

J. Cooper, E.W. Smith, and C.R. Vidal, "Influence of Ion Dynamics on Hα and Hß at Low Densities," J. Phys. B: Atom. Molec. Phys., vol. 7, pp. L101-L105, 1974.

Y. Beers, G.P. Klein, and L.S. Rothman, "Dipole Moment of Water from Stark Measurements of H_2O, HDO, and D_2O," J. Chem. Phys., vol. 59, pp. 2254-2259, 1973.

A. Omont, E.W. Smith, and J. Cooper, "Redistribution of Resonance Radiation. II. The Effect of Magnetic Fields," Astrophys. J., vol. 182, pp. 283-300, 1973.

M.M. Hessel and T.B. Lucatorto, "The Rotating Heat-Pipe Oven; A Universal Device for the Containment of Atomic and Molecular Vapors," Rev. Sci. Instrum., vol. 44, pp. 561-563, 1973.

E.W. Smith, J. Cooper, and L.J. Roszman, "An Analysis of the Unified and Scalar Additivity Theories of Spectral Line Broadening," J. Quant. Spectros. Radiat. Transfer, vol. 13, pp. 1523-1538, 1973.

C.R. Vidal, J. Cooper, and E.W. Smith, "Hydrogen Stark-Broadening Table," Astrophys. J., vol. 25, pp. 37-136, 1973.

D.L. Franzen and D.A. Jennings, "Gain Saturation Measurements in CO_2, TEA Amplifiers," J. Appl. Phys., vol. 43, pp. 729-730, 1972.

E.W. Smith, J. Cooper, and C.R. Vidal, "Comments on the Validity of the Unified Path Theory of Stark Broadening," J. Phys. B: Atomic and Molecular Physics, vol. 5, pp. L33-L35, 1972.

C.R. Vidal and F.B. Haller, "Heat Pipe Oven Applications. I. Isothermal Heater of Well Defined Temperature. II. Production of Metal Vapor-Gas Mixtures," Rev. Sci. Instrum., vol. 42, pp. 1779-1784, 1971.

W.R. Chappell, J. Cooper, E.W. Smith, and T. Dillon, "A Kinetic Theory of Spectral Line Shapes," J. Stat. Phys., vol. 3, pp. 401-410, 1971.

K.B. Persson and E.G. Johnson, Jr., "The Errors in Plasma Measurements by the Microwave Cavity Techniques," NBS TN 607, 1971.

J.T. Godfrey, C.R. Vidal, E.W. Smith, and J. Cooper, "The Effect of Time Ordering on the Lyman α Profile," NBS MN 121, 1971.

J.T. Godfrey, C.R. Vidal, E.W. Smith and J. Cooper, "Effect of Time Ordering in the Unified Theory," Phys. Rev. A, vol. 3, pp. 1543-1546, 1971.

J. Cooper, E.W. Smith, and W.R. Chappell, "An Adiabatic Treatment of Ion Dynamics for Forbidden Line Profiles," Phys. Lett., vol. 34A, pp. 363-365, 1971.

C.R. Vidal, J. Cooper, and E.W. Smith, "Unified Theory Calculations of Stark Broadened Hydrogen Lines Including Lower State Interactions," J. Quant. Radiat. Transfer, vol. 11, pp. 263-281, 1971.

E.W. Smith, J. Cooper, W.R. Chappell, and T. Dillon, "An Impact Theory for Doppler and Pressure Broadening—I General Theory," J. Quant. Spectros. Radiat. Transfer, vol. 11, pp. 1547-1565, 1971.

T.A. Dillon, E.W. Smith, J. Cooper, and M. Mizushima, "Semiclassical Treatment of Strong Collisions in Pressure Broadening," Phys. Rev. A, vol. 2, pp. 1839-1846, 1970.

C.R. Vidal, J. Cooper, and E.W. Smith, "Hydrogen Stark Broadening Calculations with the Unified Classical Path Theory," NBS MN 116, 1970.

D.W. Hanson, "Quasi-Optical Components Using Total Reflection in Dielectrics," IEEE Trans. Microwave Theory Tech., vol. 18, pp. 233-234, 1970.

C.R. Vidal, J. Cooper, and E.W. Smith, "Hydrogen Stark Broadening Calculations with the Unified Classical Path Theory," J. Quant. Spectros. Radiat. Transfer, vol. 10, pp. 1011-1063, 1970.

W.R. Chappell, J. Cooper, and E.W. Smith, "Non-Thermal Effects in Stark Broadening," J. Quant. Spectrosc. Radiat. Transfer, vol. 10, pp. 1195-1209, 1970.

E.R. Mosburg, Jr., "Periodic Potential Probe Configuration for Plasma Diagnostics," J. Appl. Phys., vol. 40, pp. 5290-5300, 1969.

E.W. Smith, J. Cooper, and C.R. Vidal, "Unified Classical-Path Treatment of Stark Broadening in Plasmas," Phys. Rev., vol. 185, pp. 140-151, 1969.

C.R. Vidal and J. Cooper, "Heat-Pipe Oven: A New, Well-Defined Metal Vapor Device for Spectroscopic Measurements," J. Appl. Phys., vol. 40, pp. 3370-3374, 1969.

E.W. Smith, C.R. Vidal, and J. Cooper, "Classical Path Methods in Line Broadening. II. Application to the Lyman Series of Hydrogen," NBS JRES. (U.S.), vol. 73A, pp. 405-420, 1969.

E.W. Smith, C.R. Vidal, and J. Cooper, "Classical Path Methods in Line Broadening. I. The Classical Path Approximation," NBS JRES. (U.S.), vol. 73A, pp. 389-404, 1969.

D.J. Sukle and J.S. Wells, "Fine Structure in Electron Paramagnetic Resonance of Mn^{2+} in Zinc Sulfate," Phys. Rev., vol. 180, pp. 445-450, 1969.

L.M. Matarrese, J.S. Wells, and R.L. Peterson, "EPR Spectrum of Fe^{3+} in Synthetic Brown Quartz," J. Chem. Phys., vol. 50, pp. 2350-2360, 1969.

W.R. Chappell and J. Cooper, "Electron Correlations in Stark Broadening," J. Quant. Spectrosc. Radiat. Transfer, vol. 9, pp. 149-151, 1969.

P.P. Viezbicke, Jr., "Interactions Between Nested Receiving Rhombic Antennas," IEEE Trans. Antennas Propagat., vol. 17, pp. 16-23, 1969.

M. McClintock, D.A. Jennings, and M. Mizushima, "Contribution to the Raman Line Profile in Liquids from Molecular Reorientation," Phys. Rev. Lett., vol. 21, pp. 276-278, 1968.

E.R. Mosburg, Jr. and M.S. Lojko, "Solution of the Abel Integral Transform for a Cylindrical Luminous Region with Optical Distortions at its Boundary," NBS TN 368, 1968.

H.E. Radford and K.M. Evenson, "Paramagnetic-Resonance Spectrum of Metastable (^2D) Atomic Nitrogen," Phys. Rev., vol. 168, pp. 70-74, 1968.

D.J. Sukle and J.S. Wells, "EPR Sample Orientation Servo," Rev. Sci. Instrum., vol. 39, pp. 604-605, 1968.

K.B. Persson, E.G. Johnson, Jr., and D.A. Uhlenbrock, "Theory for Cyclotron Harmonic Radiation from Plasmas," Phys. Fluids, vol. 11, pp. 619-628, 1968.

E.W. Smith, "Electron Correlations in Plasma Line Broadening," Phys. Rev., vol. 166, pp. 102-113, 1968.

K.B. Persson, E.G. Johnson, Jr., and D.A. Uhlenbrock, "A Theory for Cyclotron Harmonic Radiation from Plasmas," NBS Report 9297, pp. 1-39, 1968.

E.W. Smith and C.F. Hooper, Jr., "Comments on Ion Microfield Distributions as Used in Plasma Line Broadening Theories," J. Quant. Spectros. Radiat. Transfer, vol. 8, pp. 1617-1619, 1968.

W.R. Davey, "A Review of Studies Made on the Decade Fluctuations in the Earth's Rate of Rotation," NBS TN 358, 1967.

J.S. Wells, L.M. Matarrese, and D.J. Sukle, "Electron Spin Resonance in Single Crystals of Anhydrous Copper Sulfate," J. Chem. Phys., vol. 47, pp. 2259-2262, 1967.

J.H. Shirley, "Effect of a Sinusoidal Excitation Amplitude on the Performance of an Atomic-Beam Spectrometer," Phys. Rev., vol. 160, pp. 95-99, 1967.

E.W. Smith, "Influence of Electron Correlations on a Plasma-Broadened Lyman-Alpha Line," Phys. Rev. Lett., vol. 18, pp. 990-994, 1967.

E.W. Smith and C.F. Hooper, Jr., "Relaxation Theory of Spectral Line Broadening in Plasmas," Phys. Rev., vol. 157, pp. 126-137, 1967.

R.L. Barger, "Rare-Gas Collision Broadening in the Lowest $^3P_1$ Level of Cd," Phys. Rev., vol. 154, pp. 94-97, 1967.

E.R. Mosburg, Jr., "Recombination of He^+ and He^{++} in the Afterglow of a Helium Discharge," Phys. Rev., vol. 152, pp. 166-176, 1966.

Y. Beers and T.W. Russell, "Evaluation of a Stark Voltmeter," IEEE Trans. Instrum. Meas., vol. 15, pp. 380-388, 1966.

J.S. Wells and D.R. Winder, "EPR in Single Crystals of $NiBr_2$," J. Chem. Phys., vol. 45, pp. 410-411, 1966.

E.R. Mosburg, Jr., "Nonlinear Diffusion with Recombination in an Electron Beam Excited Plasma," Phys. Fluids, vol. 9, pp. 824-826, 1966.

K.M. Evenson and D.S. Burch, "X Band ESR Cavity for Studies of Paramagnetic Gases," Rev. Sci. Instrum., vol. 37, pp. 236-237, 1966.

E.R. Mosburg, Jr., "Recombination Studies in the Afterglow of a Helium, Brush—Cathode Plasma," NBS Report 8870, pp. 1-31, 1965.

P.P. Viezbicke, "Design and Installation of Three Forward Scatter Test Paths in the Arctic for Measuring Effects of Low Energy Solar Cosmic Rays," NBS Report 8796, pp. 1-71, 1965.

Y. Beers, "New Mode of Operation of a Phase Sensitive Detector," Rev. Sci. Instrum., vol. 6, pp. 696-700, 1965.

H.E. Bussey, J.E. Gray, E.C. Bamberger, E. Rushton, G. Russell, B.W. Petley, and D. Morris, "International Comparison of Dielectric Measurements," IEEE Trans. Instrum. Meas., vol. 13, pp. 305-311, 1964.

E.R. Mosburg, Jr. and K.B. Persson, "Nonlinear Ambipolar Diffusion of an Isothermal Plasma across a Magnetic Field," Phys. Fluids, vol. 7, pp. 1829-1833, 1964.

F.B. Haller, "All-Glass Sorption Vacuum Trap," Rev. Sci. Instrum., vol. 35, pp. 1356-1357, 1964.

K.B. Persson, "The Brush Cathode Plasma--A Well-Behaved Plasma," NBS Report 8452, pp. 1-43, 1964.

T.T. Chang, W.H. Tanttila, and J.S. Wells, "Magnetic Resonance of Mn^{2+}-Doped LiF Crystals," J. Chem. Phys., vol. 39, pp. 2453-2456, 1963.

J.L. Jespersen and G. Kamas, "Satellite Scintillation Observations at Boulder, Colorado," J. Atmos. Terr. Phys., vol. 26, pp. 457-473, 1963.

Y. Beers, "Measurement of Millimeter Wave Power By Radiation Pressure," NBS Report 7913, pp. 1-15, 1963.

H.E. Bussey and J.E. Gray, "Measurement and Standardization of Dielectric Samples," IRE Trans. Instrum., vol. 11, pp. 162-165, 1962.

K.B. Persson, "Inertia-Controlled Ambipolar Diffusion," Phys. Fluids, vol. 5, pp. 1625-1632, 1962.

D.A. Jennings and W.H. Tantilla, "Interruption of Nuclear Spin Diffusion," J. Chem. Phys., vol. 37, pp. 1874-1876, 1962.

A.J. Estin, C.L. Trembath, J.S. Wells and W.C. Daywitt, "Absolute Measurement of Temperatures of Microwave Noise Sources," Temperature—Its Measurement and Control in Science and Industry (Reinhold Publishing), vol. 3, 1962.

Y. Beers, "The Measurement of Voltage by Use of the Stark Effect," NBS Report 6747, pp. 1-38, 1961.

A.J. Estin, C.L. Trembath, J.S. Wells, and W.C. Daywitt, "Absolute Measurement of Temperatures of Microwave Noise Sources," IRE Trans. Instrum., vol. 9, pp. 209-213, 1960.

P.P. Viezbicke, "Measured Performance of an HF Log-Periodic Antenna," NBS Report 6705, pp. 1-15, 1960.

L.E. Gatterer, "A System Programmer and Data Commutator," NBS Report 6015, pp. 1-11, 1958.

OTHER FREQUENCY STANDARDS

S.R. Stein, "Space Applications of Superconductivity: Resonators for High Stability Oscillators and Other Applications," Cryogenics, pp. 363-372, 1980.

D.J. Wineland, D.A. Howe, M.B. Mohler, and H. Hellwig, "Special Purpose Ammonia Frequency Standard—A Feasibility Study," IEEE Trans. Instrum. Meas., vol. 28, pp. 122-132, 1979.

S.R. Stein and J.P. Turneaure, "Superconducting Resonators: High Stability Oscillators and Applications to Fundamental Physics and Metrology," Proc. AIP Conf. on Future Trends in Superconductive Electronics, 1978, pp. 192-213.

D.W. Allan, R.J. Besson, G. Busca, R.M. Garvey, H. Hellwig, D.A. Howe, S. Jarvis, A. Risley, S.R. Stein, F.L. Walls, and D.J. Wineland, "Some Recent Progress in Microwave Frequency and Time Standards at the National Bureau of Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 343-352.

D.J. Wineland, D.A. Howe, and M.B. Mohler, "Results with the Special-Purpose Ammonia Frequency Standard," Proc. 31st Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 1-3, 1977, pp. 562-573.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

H. Hellwig, P. Tomingas, and S. Werthman, eds., "Copper Mountain Conf.," Proc. 2nd Freq. Stand. and Metrology Symp., Copper Mountain, CO, July 5-7, 1976, pp. 1-698.

D.J. Wineland, D.A. Howe, and H. Hellwig, "Special Purpose Atomic (Molecular) Standard," Proc. 8th Ann. PTTI Mtg., Washington, DC, Nov. 20-Dec. 2, 1976, pp. 429-447.

S.R. Stein, "Application of Superconductivity to Precision Oscillators," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 321-327.

H. Hellwig, "A Review of Precision Oscillators," NBS TN 662, 1975.

H. Hellwig, "Atomic Frequency Standards: A Survey," Proc. IEEE, vol. 63, 1975, pp. 212-229.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

P. Kartaschoff and S. Jarvis, Jr., "Notes on Infrared Absorption Experiments in a Methane Molecular Beam," NBSIR 73-312, pp. 1-28, 1973.

H. Hellwig, "Areas of Promise for the Development of Future Primary Frequency Standards," Int. J. Sci. Metrology, vol. 6, pp. 118-126, 1970.

R.E. Beehler, "A Historical Review of Atomic Frequency Standards," Proc. IEEE, vol. 55, 1967, pp. 792-805.

R.E. Beehler and D.J. Glaze, "Evaluation of a Thallium Atomic Beam Frequency Standard at the National Bureau of Standards," IEEE Trans. Instrum. Meas., vol. 15, pp. 55-58, 1966.

R. Beehler, D. Halford, R. Harrach, D. Allan, D. Glaze, C. Snider, J. Barnes, R. Vessot, H. Peters, J. Vanier, L. Cutler, and L. Bodily, "An Intercomparison of Atomic Standards," Proc. IEEE, vol. 54, 1966, pp. 301-302.

R.E. Beehler and D.J. Glaze, "Experimental Evaluation of a Thallium Beam Frequency Standard," Proc. 17th Ann. Symp. Freq. Control, Ft. Monmouth, NJ, May 27-29, 1963, pp. 392-409.

J.A. Barnes, D.W. Allan, and A.E. Wainwright, "The Ammonia Beam Maser as a Standard of Frequency," IRE Trans. Instrum., vol. 11, pp. 26-30, 1962.

R.C. Mockler, "Atomic Beam Frequency Standards," Advances in Electronics and Electron Physics, vol. 15, pp. 1-71, 1962.

J.A. Barnes and L.E. Heim, "A High-Resolution Ammonia-Maser-Spectrum Analyzer," IRE Trans. Instrum., vol. 10, pp. 4-8, 1961.

R.C. Mockler and J.A. Barnes, "Maser Frequency Stability," NBS Report 6078, pp. 1-5, 1959.

H. Lyons, "Spectral Lines as Frequency Standards," NBS Report 1848, 1952.

H. Lyons, "The Atomic Clock," American Scholar, vol. 19, pp. 159-168, 1950.

H. Lyons, "The Atomic Clock—An Atomic Standard of Frequency and Time," NBS Tech. News Bulletin, vol. 33, pp. 17-24, 1949.

QUARTZ OSCILLATORS

P.H. Handel and F.L. Walls, "Analysis of Quantum 1/F Effects in Frequency Standards," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 539-540.

J.R. Vig and F.L. Walls, "Fundamental Limits on the Frequency Stabilities of Crystal Oscillators," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 506-523.

I.D. Avramov, F.L. Walls, T.E. Parker, and G.K. Montrass, "Surface Transverse Wave Oscillators with Extremely Low Thermal Noise Floors," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 379-394.

E.S. Ferre, L.M. Nelson, F.G. Ascarrunz, and F.L. Walls, "Relationship of AM to PM Noise in Selected rf and Microwave Oscillators," Proc. 12th Int. Conf. on Noise in Physical Systems and 1/f Fluctuations (ICNF), St. Louis, MO, Aug. 16-20, 1994, P.H. Handel and A.L. Chung, eds. (AIP Conf. Proc. 285), pp. 611-614.

F.L. Walls, P.H. Handel, R. Besson, and J.-J. Gagnepain, "A New Model of 1/f Noise in BAW Quartz Resonators," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 327-333.

F.L. Walls and J.J. Gagnepain, "Environmental Sensitivities of Quartz Crystal Oscillators," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 39, pp. 241-249, 1992.

J. Lowe and F.L. Walls, "Ultralinear Small-Angle Phase Modulator," Proc. 45th Ann. Symp. Freq. Control, Los Angeles, CA, May 29-31, 1991, pp. 645-648.

J. Lowe and F.L. Walls, "Ultralinear Small-Angle Phase Modulator," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 461-464.

F.L. Walls, "Environmental Sensitivities of Quartz Crystal Oscillators," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 465-486.

M.B. Bloch, J.C. Ho, C.S. Stone, A. Syed, and F.L. Walls, "Stability of High Quality Quartz Crystal Oscillators: An Update," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 80-84.

F.L. Walls, "Environmental Effects on the Medium and Long Term Frequency Stability of Quartz Oscillators," Proc. 2nd European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1989, pp. 719-727.

F.L. Walls, "The Influence of Pressure and Humidity on the Medium and Long-Term Frequency Stability of Quartz Oscillators," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 279-283.

F.L. Walls and J.R. Vig, "Acceleration Insensitive Oscillator," United States Patent - No. 4,575,690, 1986.

J.J. Gagnepain, M. Olivier, and F.L. Walls, "Excess Noise in Quartz Crystal Resonators," Proc. 37th Ann. Symp. Freq. Control, Philadelphia, PA, June 1-3, 1983, pp. 218-225.

F.L. Walls, "Vibration and Acceleration-Induced Timing Errors of Clocks and Clock Systems," Proc. 36th Ann. Symp. Freq. Control, Philadelphia, PA, June 2-3, 1982, pp. 371.

R.J. Besson, J.M. Groslambert, and F.L. Walls, "Quartz Crystal Resonators and Oscillators, Recent Developments and Future Trends," Ferroelectrics, vol. 43, pp. 57-65, 1982.

F.L. Walls, "Future of Quartz Resonator Thermometry," Proc. Workshop on Techniques for Measurement of Thermodynamic Properties, Albany, Oregon, Aug. 21, 1979, pp. 51-62.

F.L. Walls and S.R. Stein, "A Frequency-Lock System for Improved Quartz Crystal Oscillator Performance," IEEE Tran. Instrum. Meas., vol. 27, pp. 249-252, 1978.

S.R. Stein and F.L. Walls, "Composite Oscillator Systems for Mtg. User Needs for Time and Frequency," Proc. Position Location and Navigation Symp. (PLANS), 1978, pp. 22-28.

S.R. Stein, C.M. Manney, Jr., F.L. Walls, J.E. Gray, and R.J. Besson, "A Systems Approach to High Performance Oscillators," Proc. 32nd Ann. Symp. Freq. Control, Atlantic City, NJ, May 31-June 2, 1978, pp. 527-530.

D.W. Allan, R.J. Besson, G. Busca, R.M. Garvey, H. Hellwig, D.A. Howe, S. Jarvis, A. Risley, S.R. Stein, F.L. Walls, and D.J. Wineland, "Some Recent Progress in Microwave Frequency and Time Standards at the National Bureau of Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 343-352.

R.J. Besson, "A New "Electrodeless" Resonator Design," Proc. 31st Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 1-3, 1977, pp. 147-152.

H. Hellwig, "Frequency Standards and Clocks: A Tutorial Introduction," NBS TN 616 (2nd revised edition), 1977.

J.J. Gagnepain and F.L. Walls, "Quartz Crystal Oscillators with Low Acceleration Sensitivity," NBSIR 77-855, pp. 1-13, 1977.

H. Hellwig, "Design Principles and Characteristics of Frequency and Time Standards," IEEE Trans. Nucl. Sci., vol. 23, pp. 1629-1635, 1976.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

F.L. Walls, "New Horizons and Old Pitfalls in Frequency and Time Metrology," Proc. 2nd Freq. Stand. and Metrology Symp., 1976, pp. 489-517.

J.J. Gagnepain, "Fundamental Noise Studies of Quartz Crystal Resonators," Proc. 30th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 2-4, 1976, pp. 84-91.

F.L. Walls and A.E. Wainwright, "Measurement of the Short-Term Stability of Quartz Crystal Resonators and the Implications for Crystal Oscillator Design and Applications," IEEE Trans. Instrum. Meas., vol. 24, pp. 15-20, 1975.

H. Hellwig, "A Review of Precision Oscillators," NBS TN 662, 1975.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

H. Hellwig, H.E. Bell, J.C. Bergquist, D.J. Glaze, D.A. Howe, S. Jarvis, Jr., A.E. Wainwright, and F.L. Walls, "Results in Operation, Research and Development of Atomic Clocks at the National Bureau of Standards," Proc. Int. Congress of Chronometry (CIC), 1974, pp. 1-13.

A.E. Wainwright, F.L. Walls, and W.D. McCaa, "Direct Measurements of the Inherent Frequency Stability of Quartz Crystal Resonators," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 177-179.

H. Brandenberger, F. Hadorn, D. Halford, and J.H. Shoaf, "High Quality Quartz Crystal Oscillators: Frequency Domain and Time Domain," Proc. 25th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 6-8, 1971, pp. 226-227.

D. Halford, "Frequency Stability of Quality Quartz Crystal Oscillators: Performance and Some Critical Applications," Proc. Coloque Int. de Chronometrie, 1969, pp. A-1-A-3.

L. Fey, "Obscurities of Oscillator Noise," Proc. IEEE, 1964, pp. 104-105.

W.R. Attkinson, L. Fey, and J. Newman, "Spectrum Analysis of Extremely Low Frequency Variations of Quartz Oscillators," Proc. IEEE, vol. 51, 1963.

RUBIDIUM FREQUENCY STANDARDS

C. Szekely, F.L. Walls, J.P. Lowe, R.E. Drullinger, and A. Novick, "Reducing Local Oscillator Phase Noise Limitations on the Frequency Stability of Passive Frequency Standards: Tests of a New Concept," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 41, pp. 518-521, 1994.

R.W. Fox, S.L. Gilbert, L. Hollberg, J.H. Marquardt, and H.G. Robinson, "Optical Probing of Cold Trapped Atoms," Opt. Lett., vol. 18, pp. 1456-1458, 1993.

C. Szekely, R.E. Drullinger, F.L. Walls, J.P. Lowe, and A. Novick, "Diode-Laser Pumped, Rubidium Cell Frequency Standards," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 593-597.

C. Szekely and R.E. Drullinger, "Improved Rubidium Frequency Standard Performance Using Diode Lasers with AM and FM Noise Control," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, Y.C. Chung, ed., Boston, MA, Nov. 15-19, 1992, vol. 1837, pp. 299-305.

R.E. Drullinger, C. Szekely, and J.C. Camparo, "Diode-Laser-Pumped, Gas-Cell Atomic Clocks," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 104-107.

D.W. Allan and J. Levine, "A Rubidium Frequency Standard and a GPS Receiver: Remotely Steered Clock System with Good Short-Term and Long-Term Stability," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 151-160.

M. Feldman, J.C. Bergquist, L.L. Lewis, and F.L. Walls, "Preliminary Investigation of a New Optically Pumped Atomic Rubidium Standard," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. 625-636.

L.L. Lewis and M. Feldman, "Optical Pumping by Lasers in Atomic Frequency Standards," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. 612-624.

A. Risley and S. Jarvis, Jr., "The Dependence of Frequency Upon Microwave Power of Wall-Coated and Buffer-Gas-Filled Gas Cell Rb^{87} Frequency Standards," J. Appl. Phys., vol. 51, pp. 4571-4576, 1980.

F.L. Walls, "Prospects for Advances in Microwave Atomic Frequency Standards," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 619-640.

A.S. Risley, S. Jarvis, Jr., and J. Vanier, "Study of the Dependence of Frequency Upon Microwave Power of Wall-Coated and Buffer-Gas-Filled Passive Rb^{87} Frequency Standards," Proc. 33rd Ann. Symp. Freq. Control, Atlantic City, NJ, May 30-June 1, 1979, pp. 477-483.

D.J. Wineland, "Limitations on Long-Term Stability and Accuracy in Atomic Clocks," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 81-110.

A. Risley and G. Busca, "Effect of Line Inhomogeneity on the Frequency of Passive Rb^{87} Frequency Standards," Proc. 32nd Ann. Symp. Freq. Control, Atlantic City, NJ, May 31-June 2, 1978, pp. 506-513.

D.W. Allan, R.J. Besson, G. Busca, R.M. Garvey, H. Hellwig, D.A. Howe, S. Jarvis, A. Risley, S.R. Stein, F.L. Walls, and D.J. Wineland, "Some Recent Progress in Microwave Frequency and Time Standards at the National Bureau of Standards," Proc. 9th Ann. PTTI Mtg., Greenbelt, MD, Nov. 29-Dec. 1, 1978, pp. 343-352.

H. Hellwig, "Frequency Standards and Clocks: A Tutorial Introduction," NBS TN 616 (2nd revised edition), 1977.

H. Hellwig, "Design Principles and Characteristics of Frequency and Time Standards," IEEE Trans. Nucl. Sci., vol. 23, pp. 1629-1635, 1976.

H. Hellwig, "A Review of Precision Oscillators," NBS TN 662, 1975.

H. Hellwig, "Atomic Frequency Standards: A Survey," Proc. IEEE, vol. 63, 1975, pp. 212-229.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

A.S. Risley, "The Physical Basis of Atomic Frequency Standards," NBS TN 399, 1971.

H. Hellwig, "Areas of Promise for the Development of Future Primary Frequency Standards," Int. J. Sci. Metrology, vol. 6, pp. 118-126, 1970.

R.E. Beehler, "A Historical Review of Atomic Frequency Standards," Proc. IEEE, vol. 55, 1967, pp. 792-805.

R.J. Carpenter, "A Portable Rubidium-Vapor Frequency Standard," NBS TN 235, 1964.

SPECTROSCOPY

A. Dax, J.S. Wells, L. Hollberg, A.G. Maki, and W. Urban, "Sub-Doppler Frequency Measurements on OCS at 87 THz (3.4 μm) with the CO Overtone Laser: Considerations and Details," NIST Tech. Note 1365, pp. 1-25, 1994.

J.M. Brown, K.M. Evenson, and L.R. Zink, "Atomic Sulfur: Frequency Measurement of the J = 0 ← Fine Structure Transition at 56.3 Microns by Laser Magnetic Resonance," Astrophys. J., vol. 431, pp. L147-L149, 1994.

J.M. Brown, T.D. Varberg, K.M. Evenson, and A.L. Cooksy, "Fine-Structure Intervals of $^{14}N^{+}$ by Far-Infrared Laser Magnetic Resonance," Astrophys. J., vol. 428, pp. L37-L40, 1994.

L.R. Zink, G.P. Galvao, K.M. Evenson, and E.C.C. Vasconcellos, "Far Infrared Laser Frequencies of $^{13}CD_3OH$," J. Quant. Electron., vol. 30, pp. 1361-1362, 1994.

J.M. Brown, L.R. Zink, and K.M. Evenson, "A Measurement of the J=2 ← 1 Fine Structure Intervals for ^{28}Si and ^{29}Si in the Ground ^{3}P State," Astrophys. J., vol. 423, pp. L151-L154, 1994.

T.D. Varberg, K.M. Evenson, and J.M. Brown, "Detection of OH+ in its a^1 State by Far Infrared Laser Magnetic Resonance," J. Chem. Phys., vol. 100, pp. 2487-2491, 1994.

S.P. Beaton, K.M. Evenson, and J.M. Brown, "Rotational Spectroscopy of the CoH Radical in its Ground $^3\phi$ State by Far-Infrared Laser Magnetic Resonance: Determination of Molecular Parameters," J. Mol. Spectrosc., vol. 164, pp. 395-415, 1994.

F. Matsushima, K.M. Evenson, and L. Zink, "Absolute Frequency Measurements of Methanol from 1.5 to 6.5 THz," J. Mol. Spectrosc., vol. 164, pp. 517-529, 1994.

T.D. Varberg and K.M. Evenson, "The Pure Rotational Spectra of CuH and CuD in Their Ground States Measured by Tunable Far-Infrared Spectroscopy," J. Mol. Spectrosc., vol. 164, pp. 531-535, 1994.

J.M. Brown, K.M. Evenson, and L.R. Zink, "Laser Magnetic Resonance Measurement of the $^3P_1$ - $^3P_2$ Fine Structure Splittings in ^{17}O and ^{18}O," Phys. Rev. A, vol. 48, pp. 3761-3763, 1993.

J.M. Brown, S.P. Beaton, and K.M. Evenson, "Rotational Frequencies of Transition Metal Hydrides for Astrophysical Searches in the Far-Infrared," Astrophys. J., vol. 414, pp. L125-L127, 1993.

R.W. Fox, C. Weimer, L. Hollberg, and G.C. Turk, "The Diode Laser as a Spectroscopic Tool," Spectrochimica Acta, vol. 15, pp. 291-299, 1993.

T.D. Varberg and K.M. Evenson, "Laser Spectroscopy of Carbon Monoxide: A Frequency Reference for the Far Infrared," IEEE Trans. Instrum. Meas., vol. 42, pp. 412-414, 1993.

G.W. Schwaab, K.M. Evenson, and L.R. Zink, "Far-Infrared Self-Broadening and Pressure Shift Measurements of Methyl Cyanide," Int. J. Infrared Millimeter Waves, vol. 14, pp. 1643-1655, 1993.

T. D. Varberg and K. M. Evenson, "The Rotational Spectrum of OH in the v=0-3 Levels of Its Ground State," J. Mol. Spectrosc., vol. 157, pp. 55-67, 1993.

M. Murtz, M. Schaefer, M. Schneider, J.S. Wells, W. Urban, U. Schiessl, and M. Tacke, "Stabilization of 3.3 and 5.1 μm Lead-Salt Diode Lasers by Optical Feedback," Opt. Communications, vol. 94, pp. 551-556, 1992.

D.J. Wineland, J.J. Bollinger, W.M. Itano, F.L. Moore, and D.J. Heinzen, "Spin Squeezing and Reduced Quantum Noise in Spectroscopy," Phys. Rev. Lett., vol. 46, pp. 6797-6800, 1992.

A. Dax, M. Muertz, J.S. Wells, M. Schneider, E. Bachem, and W. Urban, "Extension of Heterodyne Frequency Measurements on OCS to 87 THz (2900 cm^{-1})," J. Mol. Spectrosc., vol. 156, pp. 98-103, 1992.

S. Waltman, A. Romanovsky, J. Wells, R.W. Fox, L.W. Hollberg, M.P. Sassi, and H.G. Robinson, "Precise Optical Frequency References and Difference Frequency Measurements with Diode Lasers," Proc. SPIE Conf. on Frequency Stabilized Lasers and Their Applications, vol. 1837, Y.C. Chung, ed., Boston, MA, Nov. 15-19, 1992, pp. 386-391.

A.G. Maki and J.S. Wells, "New Wavenumber Calibration Tables from Heterodyne Frequency Measurements," J. Res. Natl. Inst. Stand. Technol., vol. 97, pp. 409-470, 1992.

A.G. Maki and J.S. Wells, "Measurement and Analysis of the Fermi Resonance Between ν_5 and $2\nu_9$ of Nitric Acid," J. Mol. Spectrosc., vol. 152, pp. 69-79, 1992.

T.D. Varberg and K.M. Evenson, "Accurate Far-Infrared Rotational Frequencies of Carbon Monoxide," Atrophys. J., vol. 385, pp. 763-765, 1992.

A.G. Maki and J.S. Wells, "Wavenumber Calibration Tables from Heterodyne Frequency Measurements," NIST SP 821, 1991.

K. Park, K.V. Chance, I.G. Nolt, J.V. Radostitz, M.D. Vanek, D.A. Jennings, and K.M. Evenson, "Pressure Broadening of the 2.5 THz $H^{35}Cl$ Rotational Line by N_2 and O_2," J. Mol. Spectrosc., vol. 147, pp. 521-525, 1991.

T. Nelis, S.P. Beaton, K.M. Evenson, and J. M. Brown, "A Determination of the Molecular Parameters for NiH in its $^2\delta$ Ground State by Laser Magnetic Resonance," J. Mol. Spectrosc., vol. 148, pp. 462-478, 1991.

H.E. Radford, K.M. Evenson, F. Matushima, L.R. Zink, G.P. Galvao, and T.J. Sears, "Far Infrared Laser Frequencies of CH_3OD and N_2H_4," Int. J. Infrared Millimeter Waves, vol. 12, pp. 1161-1166, 1991.

L.R. Zink, K.M. Evenson, F. Matsushima, T. Nelis, and R. Robinson, "Atomic Oxygen Fine-Structure Splittings with Tunable Far-Infrared Spectroscopy," Astrophys. J., vol. 371, pp. L85-L86, 1991.

K.V. Chance, K.M. Evenson, D.A. Jennings, M.D. Vanek, I.G. Nolt, J.V. Radostitz, and K. Park, "Pressure Broadening of the 118.455 cm^{-1} Rotational Lines of OH by H_2, He, N_2, and O_2," J. Mol. Spectrosc., vol. 146, pp. 375-380, 1991.

S.M. Corkery, J.M. Brown, S. Beaton, and K.M. Evenson, "Molecular Parameters of Chromium Hydride in its $X^6\Sigma^+$ State Determined by Far-Infrared Laser Magnetic Resonance Spectroscopy," J. Mol. Spectrosc., vol. 149, pp. 257-273, 1991.

A.G. Maki, J.S. Wells, and J.B. Burkholder, "High-Resolution Measurements of the Bands of Carbonyl Sulfide between 2510 and 3150 cm^{-1}," J. Mol. Spectrosc., vol. 147, pp. 173-181, 1990.

M. Prevedelli, F.L. Walls, and S.P. Beaton, "High-Order Harmonic Mixing with GaAs Schottky Diodes," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 555-558.

L.R. Zink, D.A. Jennings, K.M. Evenson, and K.R. Leopold, "Laboratory Measurements for the Astrophysical Identification of MgH," Astrophys. J., vol. 359, pp. L65-L66, 1990.

A.G. Maki, J.S. Wells, and D.A. Jennings, "Heterodyne Frequency Measurements of CO and OCS Beyond 2100 cm^{-1}," J. Mol. Spectrosc., vol. 144, pp. 224-229, 1990.

G.M. Tino, L. Hollberg, A. Sasso, M. Inguscio, and M. Barsanti, "Hyperfine Structure of the Metastable $^5S_2$ State of ^{17}O Using an AlGaAs Diode Laser at 777 nm," Phys. Rev. Lett., vol. 64, pp. 2999-3002, 1990.

L.R. Zink, P. De Natale, F.S. Pavone, M. Prevedelli, K.M. Evenson, and M. Inguscio, "Rotational Far Infrared Spectrum of $^{13}CO^1$," J. Mol. Spectrosc., vol. 143, pp. 304-310, 1990.

M.D. Vanek, J.S. Wells, A.G. Maki, and J.B. Burkholder, "Heterodyne Frequency Measurements on SO_2 near 41 THz (1370 cm^{-1})," J. Mol. Spectrosc., vol. 141, pp. 346-347, 1990.

T. Nelis, J. Brown, and K.M. Evenson, "The Rotational Spectrum of the CH Radical in its $a^4\Sigma^-$ State, Studied by Far-Infrared Laser Magnetic Resonance," J. Chem. Physics, vol. 92, pp. 4067-4076, 1990.

J.S. Wells, M. Schneider, and A.G. Maki, "Heterodyne Frequency Measurements on OCS near 61.76 THz (2060 cm^{-1})," J. Mol. Spectrosc., vol. 140, pp. 170-176, 1990.

S.P. Beaton and K.M. Evenson, "The Rotational Spectrum of Copper Hydride Using Tunable Far Infrared Radiation," J. Mol. Spectrosc., vol. 142, pp. 336-339, 1990.

M. Inguscio, L.R. Zink, K.M. Evenson, and D.A. Jennings, "Accurate Frequency of the 119 μm Methanol Laser from Tunable Far Infrared Absorption Spectroscopy," IEEE J. Quantum Electron., vol. 26, pp. 575-579, 1990.

M. Schneider, J.S. Wells, and A.G. Maki, "Heterodyne Frequency Measurements of $^{12}C^{16}O$ Laser Transitions near 2050 cm^{-1}," J. Mol. Spectrosc., vol. 139, pp. 432-438, 1990.

A.G. Maki, J.S. Wells, and M.D. Vanek, "Heterodyne Frequency Measurements on N_2O near 930 cm^{-1}," J. Mol. Spectrosc., vol. 138, pp. 84-88, 1989.

M.D. Vanek, D.A. Jennings, J.S. Wells, and A.G. Maki, "Frequency Measurements of High-J Rotational Transitions of OCS and N_2O," J. Mol. Spectrosc., vol. 138, pp. 79-83, 1989.

J.J. Bollinger, D.J. Heinzen, W.M. Itano, S.L. Gilbert, and D.J. Wineland, "Test of the Linearity of Quantum Mechanics by rf Spectroscopy of the $^9Be^+$ Ground State," Phys. Rev. Lett., vol. 63, pp. 1031-1034, 1989.

M. Schneider, K.M. Evenson, M.D. Vanek, D.A. Jennings, J.S. Wells, A. Stahn, and W. Urban, "$^{12}C^{16}O$ Laser Frequency Tables for the 34.2 to 62.3 THz (1139 to 2079 cm^{-1}) Region," NBS TN 1321, 1989.

J.S. Wells, M.D. Vanek, A.G. Maki, M. Schneider, and A. Hinz, "Current Status of Frequency Calibration Tables (0 to 3000 cm^{-1}) for Tunable Diode Lasers from Heterodyne Frequency Measurements," Proc. 2nd Int. Symp. on Monitoring of Gaseous Pollutants by Tunable Diode Lasers, R.G. Grisar, G. Schmidtke, M. Tacke, and G. Restelli, eds. (Kluwer Academic Publ.), 1989, pp. 122-137.

D.A. Jennings, "Coherent Tunable Far Infrared Radiation," Appl. Phys. B, vol. 48, pp. 311-313, 1989.

J.S. Wells, M.D. Vanek, and A.G. Maki, "Heterodyne Frequency and Fourier Transform Spectroscopy Measurements on OCS near 1700 cm^{-1}," J. Mol. Spectrosc., vol. 135, pp. 84-88, 1989.

M. Schneider, A.G. Maki, M.D. Vanek, and J.S. Wells, "Heterodyne Measurements on OCS near 1372 cm^{-1}," J. Mol. Spectrosc., vol. 134, pp. 349-353, 1989.

J.M. Brown and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CD Radical and Determination of Ground State Spectrum," J. Mol. Spectrosc., vol. 136, pp. 68-85, 1989.

G. Moruzzi, M. Prevedelli, K.M. Evenson, D.A. Jennings, M.D. Vanek, and M. Inguscio, "Ultrahigh Resolution Far-Infrared Spectroscopy of Methanol," Infrared Phys., vol. 29, pp. 541-549, 1989.

M.D. Vanek, M. Schneider, J.S. Wells, and A.G. Maki, "Heterodyne Measurements on N_2O near 1635 cm^{-1}," J. Mol. Spectrosc., vol. 134, pp. 154-158, 1989.

M. Schneider, K.M. Evenson, M.D. Vanek, D.A. Jennings, J.S. Wells, and W. Urban, "Laser Heterodyne Frequency Measurements of $^{12}C^{16}O$," J. Mol. Spectrosc., vol. 135, pp. 197-206, 1989.

J.S. Wells, M. Schneider, and A.G. Maki, "Calibration Tables Covering the 1460 to 1550 cm^{-1} Region from Heterodyne Frequency Measurements on the ν_3 Bands of $^{12}CS_2$ and $^{13}CS_2$," J. Mol. Spectrosc., vol. 132, pp. 422-428, 1988.

J.M. Brown and K.M. Evenson, "The Far Infrared Laser Magnetic Resonance Spectrum of Vibrationally Excited C_2H," J. Mol. Spectrosc., vol. 131, pp. 161-171, 1988.

S.P. Beaton, K.M. Evenson, T. Nelis, and J.M. Brown, "Detection of the Free Radicals FeH, CoH, and NiH by Far Infrared Laser Magnetic Resonance," J. Chem. Phys., vol. 89, pp. 4446-4448, 1988.

D.A. Jennings and J.S. Wells, "Improved Rotational Constants for HF," J. Mol. Spectrosc., vol. 130, pp. 267-268, 1988.

A.G. Maki, W.B. Olson, J.S. Wells, and M.D. Vanek, "Heterodyne and FTS Measurements on the OCS Hot Bands Near 1890 cm^{-1}," J. Mol. Spectrosc., vol. 130, pp. 69-80, 1988.

K.M. Evenson, D.A. Jennings, J.M. Brown, L.R. Zink, K.R. Leopold, M.D. Vanek, and I.G. Nolt, "Frequency Measurement of the J = 1 ← 0 Rotational Transition of HD," Astrophys. J., vol. 330, pp. L135-L136, 1988.

T. Nelis, J.M Brown, and K.M. Evenson, "The Spectroscopic Observation of the CH Radical in its $a^4\Sigma^-$ State," J. Chem. Phys., vol. 88, pp. 2087-2088, 1988.

J.M. Brown, D.A. Jennings, M. Vanek, L.R. Zink, and K.M. Evenson, "The Pure Rotational Spectrum of ArH^{+1}," J. Mol. Spectrosc., vol. 128, pp. 587-589, 1988.

K.M. Evenson, D.A. Jennings, and M.D. Vanek, "Tunable Far Infrared Laser Spectroscopy," Frontiers of Laser Spectroscopy of Gases, A.C.P. Alves, J.M. Brown, and J.M. Hollas, eds. (Kluwer Academic Publ.), vol. 234, pp. 43-51, 1988.

L.R. Zink, K.M. Evenson, D.A. Jennings, G. Moruzzi, and M. Inguscio, "Direct Frequency Measurement of the K=6 Asymmetry Splittings in CH_3OH," J. Mol. Spectrosc., vol. 127, pp. 44-50, 1988.

M. Inguscio, L.R. Zink, K.M. Evenson, and D. A. Jennings, "Sub-Doppler Tunable Far-Infrared Spectroscopy," Opt. Lett., vol. 12, pp. 867-869, 1987.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Laser Spectroscopy of Trapped Atomic Ions," Science, vol. 237, pp. 612-617, 1987.

J.C. Bergquist, W.M. Itano, and D.J. Wineland, "Recoilless Optical Absorption and Doppler Sidebands of a Single Trapped Ion," Phys. Rev. A, vol. 36, pp. 428-430, 1987.

D.A. Jennings, K.M. Evenson, M.D. Vanek, I.G. Nolt, J.V. Radostitz, and K.V. Chance, "Air- and Oxygen-Broadening Coefficients for the O_2 Rotational Line at 60.46 cm^{-1}," Geophys. Res. Lett., vol. 14, pp. 722-725, 1987.

D.J. Wineland, W.M. Itano, and J.C. Bergquist, "Absorption Spectroscopy at the Limit: Detection of a Single Atom," Opt. Lett., vol. 12, pp. 389-391, 1987.

L.R. Zink, M. Vanek, and J.S. Wells, "NO_2 Heterodyne Frequency Measurements with a Tunable Diode Laser, a CO Laser Transfer Oscillator and CO_2 Laser Standards," NBS TN 1308, 1987.

I.G. Nolt, J.V. Radostitz, G. DiLonardo, K.M. Evenson, D.A. Jennings, K.R. Leopold, M.D. Vanek, L.R. Zink, A. Hinz, and K.V. Chance, "Accurate Rotational Constants of CO, HCl, and HF: Spectral Standard for the 0.3 to 6 THz (10 to 200 cm^{-1}) Region," J. Mol. Spectrosc., vol. 125, pp. 274-287, 1987.

D.A. Jennings, R.E. Drullinger, K.M. Evenson, C.R. Pollock, and J.S. Wells, "The Continuity of the Meter: The Redefinition of the Meter and the Speed of Visible Light," NBS JRES., vol. 92, pp. 11-16, 1987.

A. Hinz, J.S. Wells, and A.G. Maki, "Heterodyne Measurements of Hot Bands and Isotopic Transitions of N_2O Near 7.8 μm," Z. Phys. D - Atoms, Molecules and Clusters, vol. 5, pp. 351-358, 1987.

R.J. Saykally, K.M. Evenson, D.A. Jennings, L.R. Zink, and A. Scalabrin, "New FIR Laser Lines and Frequency Measurements for Optically Pumped CD_3OH," Int. J. Infrared Millimeter Waves, vol. 8, pp. 653-662, 1987.

D.A. Jennings, K.M. Evenson, L.R. Zink, C. Demuynck, J.C. Destombes, B. Lemoine, and J.W.C. Johns, "High Resolution Spectroscopy of HF from 40 to 1100 cm^{-1}: Highly Accurate Rotational Constants," J. Mol. Spectrosc., vol. 122, pp. 477-480, 1987.

K.R. Leopold, L.R. Zink, K.M. Evenson, and D.A. Jennings, "Far-Infrared Spectrum of Sodium Hydride," J. Mol. Spectrosc., vol. 122, pp. 150-156, 1987.

E.C.C. Vasconcellos, S.A. Davidson, J.M. Brown, K.R. Leopold, and K.M. Evenson, "Rotational and Hyperfine Constants of Vibrationally Excited NH($a^1\Delta$; $v=1$)," J. Mol. Spectrosc., vol. 122, pp. 242-245, 1987.

L.R. Zink, J.S. Wells, and A.G. Maki, "Heterodyne Frequency Measurements on N_2O Near 1060 cm^{-1}," J. Mol. Spectrosc., vol. 123, pp. 426-433, 1987.

K.R. Leopold, K.M. Evenson, E.R. Comben, and J.M. Brown, "The Far Infrared Laser Magnetic Resonance ^{17}OH Radical: Determination of Nuclear Hyperfine Parameters," J. Mol. Spectrosc., vol. 122, pp. 440-454, 1987.

E.C.C. Vasconcellos, J. Wyss, and K.M. Evenson, "Frequency Measurements of Far Infrared $^{12}CH_3OH$ Laser Lines," Int. J. Infrared Millimeter Waves, vol. 8, pp. 647-651, 1987.

K.M. Evenson, D.A. Jennings, L.R. Zink, and K.R. Leopold, "Tunable Far Infrared Laser Spectroscopy," Proc. 11th Int. Conf. on Infrared and Millimeter Waves, G. Moruzzi, ed. (ETS Editrice), Tirrenia, Pisa, Oct. 20-24, 1986, pp. 267-271.

J.M. Brown, J.E. Schubert, R.J. Saykally, and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CF Radical and Determination of Ground State Parameters," J. Mol. Spectrosc., vol. 120, pp. 421-434, 1986.

K.V. Chance, I.G. Nolt, L. Zink, D.A. Jennings, K.M. Evenson, M.D. Vanek, and J.V. Radostitz, "Collisional Broadening of HCl Rotational Transitions Using Tunable Far-Infrared Radiation," Proc. 10th Int. Conf. on Infrared and Millimeter Waves, Giovanni Moruzzi, ed., Tirrenia, Italy, Oct. 20-24, 1986, pp. 277-279.

A.L. Cooksy, R.J. Saykally, J.M. Brown, and K.M. Evenson, "Accurate Determination of the Fine Structure Intervals in the ^3P Ground States of ^{13}C and ^{12}C by Far Infrared Laser Magnetic Resonance," Astrophys. J., vol. 309, pp. 828-832, 1986.

J.M. Brown, L.R. Zink, D.A. Jennings, K.M. Evenson, A. Hinz, and I.G. Nolt, "Laboratory Measurement of the Rotational Spectrum of the OH Radical with Tunable Far-Infrared Radiation," Astrophys. J., vol. 307, pp. 410-413, 1986.

K.R. Leopold, K.M. Evenson, and J.M. Brown, "Far Infrared Laser Magnetic Resonance Detection of NH and ND," J. Chem. Phys., vol. 85, pp. 324-330, 1986.

E.R. Comben, J.M. Brown, T.C. Steimle, K.R. Leopold, and K.M. Evenson, "The Microwave and Far-Infrared Spectra of the ^{18}OH Radical," Astrophys. J., vol. 305, pp. 513-517, 1986.

A.G. Maki, J.S. Wells, and A. Hinz, "Heterodyne Frequency Measurements on the $12^00\text{-}00^00$ Band of OCS," Int. J. Infrared Millimeter Waves, vol. 7, pp. 909-917, 1986.

K.R. Leopold, L.R. Zink, K.M. Evenson, D.A. Jennings, and M. Mizushima, "The Far Infrared Spectrum of Magnesium Hydride," J. Chem. Phys., vol. 84(3), pp. 1935-1937, 1986.

R.J. Saykally, K.M. Evenson, E.R. Comben, and J.M. Brown, "Measurement of the Rotational Spectrum of Carbon Monoxide in its Metastable $a^3\Sigma$ State by Laser Magnetic Resonance," Mol. Phys., vol. 58, pp. 735-743, 1986.

J.M. Brown, J.E. Schubert, R.J. Saykally, and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CF Radical and Determination of Ground State Parameters," J. Mol. Spectrosc., vol. 120, pp. 421-434, 1986.

E.C.C. Vasconcellos, D.A. Jennings, and K.M. Evenson, "Frequency Measurement of the Solitary Ethyl Alcohol Laser Line," Int. J. Infrared Millimeter Waves, vol. 7, pp. 291-292, 1986.

A. Hinz, J.S. Wells, and A.G. Maki, "Heterodyne Frequency Measurements on the Nitric Oxide Fundamental Band," J. Mol. Spectrosc., vol. 119, pp. 120-125, 1986.

J.M. Brown, K.M. Evenson, and Trevor J. Sears, "Infrared and Far-Infrared Laser Magnetic Resonance Spectroscopy of the GeH Radical: Determination of Ground State Parameters," J. Chem. Phys., vol. 83, pp. 3275-3284, 1985.

M. Inguscio, K.R. Leopold, J.S. Murray, and K.M. Evenson, "Laser-Magnetic-Resonance Detection of Magnesium Atoms in the Metastable $^3P_{0,1,2}$ States," J. Opt. Soc. Am. B, vol. 2, pp. 1566-1569, 1985.

W.M. Itano, J.C. Bergquist, and D.J. Wineland, "Measurements of the g_J Factors of the $6s^2{}_{1/2}$ and $6p^2P_{1/2}$," J. Opt. Soc. Am. B, vol. 2, pp. 1392-1394, 1985.

K.M. Evenson, D.A. Jennings, K.R. Leopold, and L.R. Zink, "Tunable Far Infrared Spectroscopy," Laser Spectroscopy VII, Proc. 7th Int. Conf., Hawaii, June 24-28, 1985, T.W. Hansch and Y.R. Shen, eds. (Springer-Verlag), vol. 49, 1985, pp. 366-370.

J.C. Bergquist, D.J. Wineland, W.M. Itano, H. Hemmati, H.-U. Daniel, and G. Leuchs, "Two-Photon Optical Spectroscopy of Trapped HgII," Laser Spectroscopy VII, T.W. Hansch and Y.R. Shen, eds. (Springer-Verlag), pp. 6-9, 1985.

J.S. Wells, D.A. Jennings, A. Hinz, and J.S. Murray, "Heterodyne Frequency Measurements on N_2O at 5.3 and 9.0 μm," J. Opt. Soc. Am. B, vol. 2, pp. 857-861, 1985.

J.M. Brown, R.F. Curl, and K.M. Evenson, "The Microwave and Far-Infrared Spectra of the SiH Radical," Astrophys. J., vol. 292, pp. 188-191, 1985.

J.J. Bollinger, J.S. Wells, D.J. Wineland, and W.M. Itano, "Hyperfine Structure of the $2p\ ^2P_{1/2}$ State in $^9Be^+$," Phys. Rev. A, vol. 31, pp. 2711-2714, 1985.

K.M. Evenson, M. Inguscio, and D.A. Jennings, "Point Contact Diode at Laser Frequencies," J. Appl. Phys., vol. 57(3), pp. 956-960, 1985.

D. Pereira, E.C.C. Vasconcellos, A. Scalabrin, K.M. Evenson, F.R. Petersen, and D.A. Jennings, "Measurements of New FIR Laser Lines in CD_3OD," Int. J. Infrared Millimeter Waves, vol. 6, pp. 877-882, 1985.

E.C.C. Vasconcellos and K.M. Evenson, "New Far Infrared Laser Lines Obtained by Optically Pumping $^{13}CD_3OD$," Int. J. Infrared Millimeter Waves, vol. 6, pp. 1157-1167, 1985.

J.S. Wells, A. Hinz, and A.G. Maki, "Heterodyne Frequency Measurements on N_2O Between 1257 and 1340 cm^{-1}," J. Mol. Spectrosc., vol. 114, pp. 84-96, 1985.

M. Inguscio and K.M. Evenson, "Pressure Effects on the Frequency of Continuous-Wave Optically Pumped Far-Infrared Lasers," Opt. Lett., vol. 9, pp. 443-444, 1984.

J.M. Brown, R.F. Curl, and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the SiH Radical and Determination of Ground State Parameters," J. Chem. Phys., vol. 81, pp. 2884-2890, 1984.

R.J. Saykally, L. Veseth, and K.M. Evenson, "Laser Magnetic Resonance Rotational Spectroscopy of $^2\Sigma$ Radicals: Ethynyl (CCH)," J. Chem. Phys., vol. 80(6), pp. 2247-2255, 1984.

K.M. Evenson, D.A. Jennings, and F.R. Petersen, "Tunable Far-Infrared Spectroscopy," Appl. Phys. Lett., vol. 44(6), pp. 576-578, 1984.

M. Inguscio, K.M. Evenson, V. Beltran-Lopez, and E. Ley-Koo, "The Direct Measurement of the 3^3P_0-3^3P_1 Fine-Structure Interval and the g_J-Factor of Atomic Silicon by Laser Magnetic Resonance," Astrophys. J., vol. 278, pp. L127-L130, 1984.

K.M. Evenson, T.J. Sears, and A.R.W. McKellar, "Far-Infrared Laser Magnetic Resonance of Vibrationally Excited CD_2," J. Opt. Soc. Am. B, vol. 1, pp. 15-21, 1984.

M. Mizushima, L.R. Zink, and K.M. Evenson, "Rotational Structure of $^{16}O_2$, $^{16}O^{17}O$, and $^{16}O^{18}O(X^3\Sigma_g^-)$ from Laser Magnetic Resonance Spectra," J. Mol. Spectrosc., vol. 107, pp. 395-404, 1984.

A.G. Maki and J.S. Wells, "High Resolution Spectrum of the ν_5 Band of Nitric Acid (HNO_3) near 880 cm^{-1}," J. Mol. Spectrosc., vol. 108, pp. 17-30, 1984.

M. Inguscio, K.R. Leopold, J.M. Murray, and K.M. Evenson, "Far Infrared Laser Magnetic Resonance of Metastable (^3P) Mg," IR and MM Waves, Takarazuka, pp. 96-97, 1984.

J.S. Wells, D.A. Jennings, and A.G. Maki, "Improved Deuterium Bromide 1-0 Band Molecular Constants from Heterodyne Frequency Measurements," J. Mol. Spectrosc., vol. 107, pp. 48-61, 1984.

F.R. Petersen, J.S. Wells, K.J. Siemsen, A.M. Robinson, and A.G. Maki, "Heterodyne Frequency Measurements and Analysis of CO_2 Laser Hot Band Transitions," J. Mol. Spectrosc., vol. 105, pp. 324-330, 1984.

C.R. Pollock, F.R. Petersen, D.A. Jennings, J.S. Wells, and A.G. Maki, "Absolute Frequency Measurements of the 00^02-00^00, 20^01-00^00, and 12^01-00^00 Bands of N_2O by Heterodyne Spectroscopy," J. Mol. Spectrosc., vol. 107, pp. 62-71, 1984.

J.C. Bergquist and H.-U. Daniel, "A Wideband Frequency-Offset-Locked Dye Laser Spectrometer Using a Schottky Barrier Mixer," Opt. Commun., vol. 48, pp. 327-333, 1984.

T.J. Sears, A.R.W. McKellar, P.R. Bunker, K.M. Evenson, and J.M. Brown, "Infrared and Far-Infrared Transition Frequencies for the CH_2 Radical," Astrophys. J., vol. 276, pp. 399-402, 1984.

K.M. Evenson, D.A. Jennings, F.R. Petersen, J.S. Wells, and R.E. Drullinger, "Optical Frequency Synthesis Spectroscopy," Prog. Quant. Electr., vol. 8, pp. 143-151, 1984.

A.R.W. McKellar, P.R. Bunker, T.J. Sears, K.M. Evenson, R.J. Saykally, and S.R. Langhoff, "Far Infrared Laser Magnetic Resonance of Singlet Methylene: Singlet-Triplet Perturbations, Singlet-Triplet Transitions, and the Singlet-Triplet Splitting," J. Chem. Phys., vol. 79, pp. 5251-5264, 1983.

P.R. Bunker, T.J. Sears, A.R.W. McKellar, K.M. Evenson, and F.J. Lovas, "The Rotational Spectrum of the CD_2 Radical Studied by Far Infrared Laser Magnetic Resonance Spectroscopy," J. Chem. Phys., vol. 79, pp. 1211-1219, 1983.

K.M. Evenson and M. Inguscio, "Laser Magnetic Resonance Spectroscopy of Atoms," Laser Spectroscopy VI, Proc. 6th Int. Conf., H.P. Weber and W. Luthy, eds. (Springer-Verlag), 1983, pp. 80-81.

J.M. Brown and K.M. Evenson, "The Microwave and Far-Infrared Spectra of the CH Radical," Astrophys. J., vol. 268, pp. L51-L56, 1983.

F.J. Lovas, R.D. Suenram, and K.M. Evenson, "Laboratory Measurement of the 4_{04}-3_{13} 70 GHz Transition of Ground-State Methylene (CH_2)," Astrophy. J., vol. 267, pp. L131-L133, 1983.

D.J. Wineland, J.J. Bollinger, and W.M. Itano, "Laser-Fluorescence Mass Spectroscopy," Phys. Rev. Lett., vol. 50, pp. 628-631, 1983.

R.J. Saykally, K.G. Lubic, and K.M. Evenson, "Structures of Molecular Ions from Laser Magnetic Resonance Spectroscopy," Molecular Ions, J. Berkowitz and K.-O. Groeneveld, eds. (Plenum Press), pp. 33-52, 1983.

D.J. Wineland, W.M. Itano, J.J. Bollinger, J.C. Bergquist, and H. Hemmati, "Spectroscopy of Stored Ions Using Fluorescence Techniques," Society of Photo-Optical Instrumentation Engineers (SPIE), vol. 426, pp. 65-70, 1983.

J.S. Wells, F.R. Petersen, and A.G. Maki, "Heterodyne Frequency Measurements and Frequency Calibration Standards for Tunable Diode Lasers," Society of Photo-Optical Instrumentation Engineers (SPIE), vol. 438, pp. 110-118, 1983.

F.R. Petersen, E.C. Beaty, and C.R. Pollock, "Improved Rovibrational Constants and Frequency Tables for the Normal Laser Bands of $^{12}C^{16}O_2$," J. Mol. Spectrosc., vol. 102, pp. 112-122, 1983.

M. Mizushmima, K.M. Evenson, J.A. Mucha, D.A. Jennings, and J.M. Brown, "Laser Magnetic Resonance of the O_2 Molecule at 699 μm," J. Mol. Spectrosc., vol. 100, pp. 303-315, 1983.

C.R. Pollock, F.R. Petersen, D.A. Jennings, and J.S. Wells, "Absolute Frequency Measurements of the 2-0 Band of CO at 2.3 μm; Calibration Standard Frequencies from High Resolution Color Center Laser Spectroscopy," J. Mol. Spectrosc., vol. 99, pp. 357-368, 1983.

D.J. Wineland, W.M. Itano, and R.S. Van Dyck, Jr., "High-Resolution Spectroscopy of Stored Ions," Adv. At. Mol. Phys., vol. 19, pp. 135-186, 1983.

J.S. Wells, F.R. Petersen, and A.G. Maki, "Heterodyne Frequency Measurements of Carbonyl Sulfide Transitions at 26 and 51 THz Improved OCS, $O^{13}CS$, and $OC^{34}S$ Molecular Constants," J. Mol. Spectrosc., vol. 98, pp. 404-412, 1983.

J.M. Brown and K.M. Evenson, "The Far-Infrared Laser Magnetic Resonance Spectrum of the CH Radical and Determination of Ground-State Parameters," J. Mol. Spectrosc., vol. 98, pp. 392-403, 1983.

T.J. Sears, P.R. Bunker, A.R.W. McKellar, K.M. Evenson, D.A. Jennings, and J.M. Brown, "The Rotational Spectrum and Hyperfine Structure of the Methylene Radical CH_2 Studied by Far-Infrared Laser Magnetic Resonance Spectroscopy," J. Chem. Phys., vol. 77, pp. 5348-5362, 1982.

J.M. Brown, J.E. Schubert, K.M. Evenson, and H.E. Radford, "The Far-Infrared Spectrum of the OH Radical," Astrophys. J., vol. 258, pp. 899-903, 1982.

R.J. Saykally, K.G. Lubic, A. Scalabrin, and K.M. Evenson, "The Pure Rotational Spectrum and Hyperfine Structure of CF Studied by Laser Magnetic Resonance," J. Chem. Phys., vol. 77, pp. 58-67, 1982.

Y.-P. Lee, R.M. Stimpfle, R.A. Perry, J.A. Mucha, K.M. Evenson, D.A. Jennings, and C.J. Howard, "Laser Magnetic Resonance Spectroscopy of ClO and Kinetic Studies of the Reactions of ClO with NO and NO_2," Int. J. Chem. Kinetics, vol. 14, pp. 711-732, 1982.

C.W. Patterson, R.S. McDowell, N.G. Nereson, B.J. Krohn, J.S. Wells, and F.R. Petersen, "Tunable Laser Diode Study of the ν_3 Band of SiF_4 Near 9.7 μm," J. Mol. Spectrosc., vol. 91, pp. 416-423, 1982.

F.R. Petersen, J.S. Wells, A.G. Maki, and K.J. Siemsen, "Heterodyne Frequency Measurements of $^{13}CO_2$ Laser Hot Band Transitions," Appl. Opt., vol. 20, pp. 3635-3640, 1981.

W.M. Itano and D.J. Wineland, "Precision Measurement of the Ground-State Hyperfine Constant of $^{25}Mg^+$," Phys. Rev. A, vol. 24, pp. 1364-1373, 1981.

W.M. Itano and D.J. Wineland, "Laser Cooling and Double Resonance Spectroscopy of Stored Ions," Laser Spectroscopy V, A.R.W. McKellar, T. Oka, and B.P. Stoicheff, eds. (Springer-Verlag), pp. 360-368, 1981.

J.S. Wells, F.R. Petersen, A.G. Maki, and D.J. Sukle, "Heterodyne Frequency Measurements on the 11.6-μm Band of OCS: New Frequency/Wavelength Calibration Tables for 11.6- and 5.8-μm OCS Bands," Appl. Opt., vol. 20, pp. 1676-1684, 1981.

H.E. Radford, K.M. Evenson, and D.A. Jennings, "Far-Infrared LMR Detection of Hydroxymethyl," Chem. Phys. Lett., vol. 78, pp. 589-591, 1981.

K.M. Evenson, "Far-Infrared Laser Magnetic Resonance," Faraday Discussions of The Royal Society of Chemistry, vol. 71, pp. 7-14, 1981.

J.S. Wells, F.R. Petersen, A.G. Maki, and D.J. Sukle, "Heterodyne Frequency Measurements (at 11.6 μm) on Isotopic Species of Carbonyl Sulfide, $OC^{34}S$, $O^{13}CS$, $OC^{33}S$, ^{18}OCS, and $O^{13}C^{34}S$," J. Mol. Spectrosc., vol. 89, pp. 421-429, 1981.

J.M. Brown, C.M.L. Kerr, F.D. Wayne, K.M. Evenson, and H.E. Radford, "The Far-Infrared Laser Magnetic Resonance Spectrum of the OH Radical," J. Mol. Spectrosc., vol. 86, pp. 544-554, 1981.

A. Scalabrin, R.J. Saykally, K.M. Evenson, H.E. Radford and M. Mizushima, "Laser Magnetic Resonance Measurement of Rotational Transitions in the Metastable $a^1\Delta_g$ State of Oxygen," J. Mol. Spectrosc., vol. 89, pp. 344-351, 1981.

R.J. Saykally and K.M. Evenson, "Direct Measurement of Fine Structure in the Ground State of Atomic Carbon by Laser Magnetic Resonance," Astrophys. J., vol. 238, pp. L107-L111, 1980.

D.J. Wineland, J.C. Bergquist, W.M. Itano, and R.E. Drullinger, "Double-Resonance and Optical-Pumping Experiments on Electromagnetically Confined, Laser-Cooled Ions," Opt. Lett., vol. 5, pp. 245-247, 1980.

F.R. Petersen, K.M. Evenson, D.A. Jennings, and A. Scalabrin, "New Frequency Measurements and Laser Lines of Optically Pumped $^{12}CH_3OH$," IEEE J. Quantum Electron., vol. 16, pp. 319-323, 1980.

K.M. Evenson and R.J. Saykally, "Far Infrared Laser Magnetic Resonance Spectroscopy," Interstellar Molecules, B.H. Andrew, ed. (IAU Publ.), pp. 239-245, 1980.

A.G. Maki and J.S. Wells, "High-Resolution Measurement and Analysis of the Infrared Spectrum of Nitric Acid Near 1700 cm^{-1}," J. Mol. Spectrosc., vol. 82, pp. 427-434, 1980.

R.E. Drullinger, D.J. Wineland, and J.C. Bergquist, "High-Resolution Optical Spectra of Laser Cooled Ions," Appl. Phys., vol. 22, pp. 365-368, 1980.

J.S. Wells, F.R. Petersen, and A.G. Maki, "Heterodyne Frequency Measurements with a Tunable Diode Laser-CO_2 Laser Spectrometer: Spectroscopic Reference Frequencies in the 9.5-μm Band of Carbonyl Sulfide," Appl. Opt., vol. 18, pp. 3567-3573, 1979.

J.A. Mucha, K.M. Evenson, D.A. Jennings, G.B. Ellison, and C.J. Howard, "Laser Magnetic Resonance Detection of Rotational Transitions in CH_2," Chem. Phys. Lett., vol. 66, pp. 244-247, 1979.

K.M. Baird, K.M. Evenson, G.R. Hanes, D.A. Jennings, and F.R. Petersen, "Extension of Absolute-Frequency Measurements to the Visible: Frequencies of Ten Hyperfine Components of Iodine," Opt. Lett., vol. 4, pp. 263-264, 1979.

R.L. Barger, J.C. Bergquist, T.C. English, and D.J. Glaze, "Resolution of Photon-Recoil Structure of the 6573-Å Calcium Line in an Atomic Beam with Optical Ramsey Fringes," Appl. Phys. Lett., vol. 34, pp. 850-852, 1979.

R.J. Saykally and K.M. Evenson, "Observation of Pure Rotational Transitions in the HBr^+ Molecular Ion by Laser Magnetic Resonance," Phys. Rev. Lett., vol. 43, pp. 515, 1979.

J.O. Henningsen, J.G. Petersen, F.R. Petersen, D.A. Jennings, and K.M. Evenson, "High Resolution Spectroscopy of Vibrationally Excited $^{13}CH_3OH$ by Frequency Measurement of FIR Laser Emission," J. Mol. Spectrosc., vol. 77, pp. 298-309, 1979.

J.C. Bergquist, R.L. Barger, and D.J. Glaze, "High Resolution Spectroscopy of Calcium Atoms," Proc. 4th Int. Conf. on Laser Spectroscopy (FICOLS), 1979, pp. 120-129.

R.E. Drullinger and M. Stock, "The CD^*_2 Excimer: Fluorescence Band Shape and Decay Rates," J. Chem. Phys., vol. 68, pp. 5299-5300, 1978.

L.K. Lam, A. Gallagher, and R.E. Drullinger, "Measurement of HgXe Excimer Potentials," J. Chem. Phy., vol. 68, pp. 4411-4416, 1978.

M. Stock, E.W. Smith, R.E. Drullinger, and M.M. Hessel, "Relaxation of the First Excited 1_u State of Hg_2," J. Chem. Phys., vol. 68, pp. 4167-4175, 1978.

M. Stock, E.W. Smith, R.E. Drullinger, M.M. Hessel, and J. Pourcin, "Analysis of the Decay of Molecular Fluorescence in Optically Excited Mercury Vapor," J. Chem. Phys., vol. 68, pp. 1785-1793, 1978.

J.T. Hougen, J.A. Mucha, D.A. Jennings, and K.M. Evenson, "Far-Infrared Laser Magnetic Resonance Spectrum of CH," J. Mol. Spectrosc., vol. 72, pp. 463-483, 1978.

C.J. Howard and K.M. Evenson, "Kinetics of the Reaction of HO_2 with NO," Geophys. Res. Lett., vol. 4, pp. 437-440, 1977.

M. Stock, E.W. Smith, R.E. Drullinger, and M.M. Hessel, "Relaxation of the Mercury 6^3P_0 and 6^3P_1 States," J. Chem. Phys., vol. 67, pp. 2463-2469, 1977.

E.W. Smith, R.E. Drullinger, M.M. Hessel, and J. Cooper, "A Theoretical Analysis of Mercury Molecules," J. Chem. Phys., vol. 66, pp. 5667-7001, 1977.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "Experimental Studies of Mercury Molecules," J. Chem. Phys., vol. 66, pp. 5656-5666, 1977.

K.M. Evenson, D.A. Jennings, F.R. Petersen, J.A. Mucha, J.J. Jimenez, R.M. Charlton, and C.J. Howard, "Optically Pumped FIR Lasers: Frequency and Power Measurements and Laser Magnetic Resonance Spectroscopy," IEEE J. Quantum Electron., vol. 13, pp. 442-444, 1977.

M. Stock, R.E. Drullinger, and M.M. Hessel, "Comparison Between Electron Beam and Optically Produced Mercury Excimer Fluorescence," Chem. Phys. Lett., vol. 45, pp. 592-594, 1977.

J.A. Mucha, D.A. Jennings, K.M. Evenson, and J.T. Hougen, "Far-Infrared Laser Magnetic Resonance Spectrum of CH_2F," J. Mol. Spectrosc., vol. 68, pp. 122-124, 1977.

C.J. Howard and K.M. Evenson, "Rate Constants for the Reactions of OH with Ethane and Some Halogen Substituted Ethanes at 296 K," J. Chem. Phys., vol. 64, pp. 4303-4306, 1976.

J.S. Wells, G.E. Streit, and F.R. Petersen, "Application of Infrared Frequency Synthesis Techniques With Metal-Insulator-Metal Diodes to the Spin Flip Raman Laser," NBS TN 680, 1976.

J.M. Cook, K.M. Evenson, C.J. Howard, and R.F. Curl, Jr., "Laser Magnetic Resonance Spectrum of HCO on the D_2O 108 μm Laser Line," J. Chem. Phys., vol. 64, pp. 1381-1388, 1976.

K.M. Evenson and F.R. Petersen, "Laser Frequency Measurements, the Speed of Light, and the Meter," Spectroscopy of Atoms and Molecules, H. Walther, ed. (Springer-Verlag), vol. 2, pp. 349-368, 1976.

J.S. Wells, F.R. Petersen, G.E. Streit, P.D. Goldan, and C.M. Sadowski, "An Infrared Spectrometer Utilizing A Spin Flip Raman Laser, IR Frequency Synthesis Techniques, and CO_2 Laser Frequency Standards," NBS TN 670, 1976.

Y. Beers and C.J. Howard, "The Microwave Spectrum of HO_2 Near 65 GHz," J. Chem. Phys., vol. 63, pp. 4212-4216, 1975.

L. Tomuta, M. Mizushima, C.J. Howard, and K.M. Evenson, "Rotational Structure and Magnetic g Factors of $O_2(X^3\Sigma_g^-, \mu = 0)$ From Laser-Magnetic-Resonance Spectra," Phys. Rev. A, vol. 12, pp. 974-979, 1975.

M.M. Hessel, R.E. Drullinger, and H.P. Broida, "Chemiluminescent Reactions in a Heat-Pipe Oven," J. Appl. Phys., vol. 46, pp. 2317-2318, 1975.

J.T. Hougen, H.E. Radford, K.M. Evenson, and C.J. Howard, "Analysis of the Laser Magnetic Resonance Spectrum of HO_2," J. Mol. Spectrosc., vol. 56, pp. 210-228, 1975.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "Analysis of Optically Excited Mercury Molecules," NBS MN 143, 1975.

R.E. Drullinger, M.M. Hessel, and E.W. Smith, "New Laser Measurement Techniques for Excited Electronic States of Diatomic Molecules," Proc. Megeve Laser Spectroscopy Conf., 1975, pp. 91-99.

M.M. Hessel, E.W. Smith, and R.E. Drullinger, "Transition Dipole Moment of Na_2 and Its Variation with Internuclear Distance," Phys. Rev. Lett., vol. 33, pp. 1251-1254, 1974.

C.J. Howard and K.M. Evenson, "Laser Magnetic Resonance Study of the Gas Phase Reactions of OH with CO, NO, and NO_2," J. Chem. Phys., vol. 61, pp. 1943-1952, 1974.

H.E. Radford, K.M. Evenson, and C.J. Howard, "HO_2 Detected by Laser Magnetic Resonance," J. Chem. Phys., vol. 60, pp. 3178-3183, 1974.

S.S. Haque, R.M. Lees, J.M. Saint Clair, Y. Beers, and D.R. Johnson, "Microwave Spectrum of ^{13}C Methanol," Astrophys. J., vol. 187, pp. L15-L17, 1974.

R.E. Drullinger and R.N. Zare, "Optical Pumping of Molecules II. Relaxation Studies," J. Chem. Phys., vol. 59, pp. 4225-4234, 1973.

R.W. Field, A.D. English, T. Tanaka, D.O. Harris, and D.A. Jennings, "Microwave Optical Double Resonance Spectroscopy with a cw Dye Laser: BaO $X^1\Sigma$ and $A^1\Sigma$," J. Chem. Phys., vol. 59, pp. 2191-2203, 1973.

Y. Beers, G.P. Klein, W.H. Kirchhoff, and D.R. Johnson, "Millimeter Wave Spectrum of Thioformaldehyde," J. Mol. Spectrosc., vol. 44, pp. 553-557, 1972.

Y. Beers and G.P. Klein, "The Stark Splitting of Millimeter Wave Transitions of Water," J. Res. Natl. Bur. Stand. (U.S.), vol. 76A, pp. 521-528, 1972.

M. Mizushima, J.S Wells, K.M. Evenson, and W.M. Welch, "Laser Magnetic Resonance of the O_2 Molecule Using the 337-μm HCN Laser," Phys. Rev. Lett., vol. 29, pp. 831-833, 1972.

R.F. Curl, Jr., K.M. Evenson and J.S. Wells, "Laser Magnetic Resonance Spectrum of NO_2 at 337 μm and 311 μm," J. Chem. Phys., vol. 56, pp. 5143-5151, 1972.

M. Mizushima, K.M. Evenson, and J.S. Wells, "Laser Magnetic Resonance of the NO Molecule Using 78-, 79-, and 119-μm H_2O Laser Lines," Phys. Rev. A, vol. 5, pp. 2276-2287, 1972.

K.M. Evenson, H.E. Radford, and M.M. Moran, Jr., "CH Free Radicals Detected by Infrared Laser Magnetic Resonance," Appl. Phys. Lett., vol. 18, pp. 426-427, 1971.

K.M. Evenson, J.S. Wells, and H.E. Radford, "Infrared Resonance of OH with the H_2O Laser: A Galactic Maser Pump?," Phys. Rev. Lett., vol. 25, pp. 199-202, 1970.

K.M. Evenson, "Microwave Magnetic-Dipole Transitions Between Excited Electronic States of CN," Phys. Rev., vol. 178, pp. 178-181, 1969.

K.M. Evenson, H.P. Broida, J.S. Wells, R.J. Mahler, and M. Mizushima, "Electron Paramagnetic Resonance Absorption in Oxygen with the HCN Laser," Phys. Rev. Lett., vol. 21, pp. 1038-1040, 1968.

K.M. Evenson, "The Optical Detection of Stimulated Emission in CN at 20-CM Wavelength," Appl. Phys. Lett., vol. 12, pp. 253-254, 1968.

K.M. Evenson and D.S. Burch, "Use of O_2 for ESR Calibration for Quantitative Measurement of Gas Concentrations," J. Chem. Phys., vol. 44, pp. 1715-1716, 1966.

K.M. Evenson and H.P. Broida, "Measurements of Collisional Energy Transfer Between Rotational Energy Levels in CN," J. Chem. Phys., vol. 44, pp. 1637-1641, 1966.

K.M. Evenson and H.E. Radford, "ESR Measurements of Metastable Atomic Nitrogen in Helium-Nitrogen Afterglows," Phys. Rev. Lett., vol. 15, pp. 916-917, 1965.

K.M. Evenson, J.L. Dunn, and H.P. Broida, "Optical Detection of Microwave Transitions Between Excited Electronic States of CN and the Identification of the Transitions Involved," Phys. Rev., vol. 136, pp. 1566-1571, 1964.

F.C. Fehsenfeld, K.M. Evenson, and H.P. Broida, "Microwave Discharge Cavities Operating at 2450 MHz," NBS Report 8701, pp. 1-27, 1964.

STATISTICAL STUDIES

L.M. Nelson, C.W. Nelson, and F.L. Walls, "Relationship of AM to PM Noise in Selected rf Oscillators," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 41, pp. 680-684, 1994.

P.H. Handel and F.L. Walls, "Analysis of Quantum 1/F Effects in Frequency Standards," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 539-540.

D.A. Howe and D.B. Percival, "Wavelet Analysis for Synchronization and Timekeeping," Proc. 1994 IEEE Int. Freq. Control Symp., Boston, MA, June 1-3, 1994, pp. 791-797.

E.S. Ferre, L.M. Nelson, F.G. Ascarrunz, and F.L. Walls, "Relationship of AM to PM Noise in Selected rf and Microwave Oscillators," Proc. 12th Int. Conf. on Noise in Physical Systems and 1/f Fluctuations (ICNF), St. Louis, MO, Aug. 16-20, 1994, P.H. Handel and A.L. Chung, eds. (AIP Conf. Proc. 285), pp. 611-614.

A. Lepek and F.L. Walls, "Cross Correlation Analysis Improves Time-Domain Measurements," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 312-320.

F.L. Walls, "Calibration System for Determining the Accuracy of Phase Modulation and Amplitude Modulation Noise Measurement Apparatus," United States Patent - No. 5,172,064, 1992.

M.A. Weiss, D.W. Allan, D.D. Davis, and J. Levine, "Smart Clock: A New Time," IEEE Trans. Instrum. Meas., vol. 41, pp. 915-918, 1992.

J. Levine, "Measurement Methods and Algorithms for Comparison of Local and Remote Clocks," Proc. 24th Ann. PTTI Mtg., McLean, VA, Dec. 1-3, 1992, pp. 277-285.

M.A. Weiss and C. Hackman, "Confidence on the Three-Point Estimator of Frequency Drift," Proc. 24th Ann. PTTI Mtg., McLean, VA, Dec. 1-3, 1992, pp. 451-458.

M.A. Weiss, D.W. Allan, and D.A. Howe, "Confidence on the Second Difference Estimation of Drift," Proc. 1992 IEEE Int. Freq. Control Symp., Hershey, PA, May 27-29, 1992, pp. 300-305.

F.L. Walls, J. Gary, A. O'Gallagher, R. Sweet, and L. Sweet, "Time Domain Frequency Stability Calculated from the Frequency Domain Description: Use of the SIGINT Software Package to Calculate Time Domain Frequency Stability from the Frequency Domain," NISTIR 89-3916 (revised), pp. 1-31, 1991.

J. Rutman and F.L. Walls, "Characterization of Frequency Stability in Precision Frequency Sources," Proc. IEEE, vol. 79, 1991, pp. 952-960.

D.W. Allan, M.A. Weiss, and J.L. Jespersen, "A Frequency-Domain View of Time-Domain Characterization of Clocks and Time and Frequency Distribution Systems," Proc. 45th Ann. Symp. Freq. Control, Los Angeles, CA, May 29-31, 1991, pp. 667-678.

D.W. Allan, "Time and Frequency Metrology: Current Status and Future Considerations," Proc. 5th European Freq. and Time Forum, Bescanson, France, Mar. 13-15, 1991, pp. 1-9.

J.A. Barnes and D.W. Allan, "Variances Based on Data with Dead Time Between the Measurements," NIST Tech. Note 1318, pp. 1-40, 1990.

J. Levine, "Synchronizing Computer Clocks Using a Local Area Network," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 409-416.

D.B. Sullivan, D.W. Allan, D.A. Howe, and F.L. Walls, "Characterization of Clocks and Oscillators," NIST Tech. Note 1337, pp. 1-342, 1990.

F.L. Walls, J. Gary, A. O'Gallagher, L. Sweet, and R. Sweet, "Time-Domain Frequency Stability Calculated from the Frequency Domain: An Update," Proc. 4th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 13-15, 1990, pp. 197-204.

F.L. Walls, C.M. Felton, A.J.D. Clements, and T.D. Martin, "Accuracy Model for Phase Noise Measurements," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 295-310.

J. Groslambert, J.J. Gagnepain, F. Vernotte, and F. Walls, "A New "Filtered Allan Variance" and its Application to the Identification of Phase and Frequency Noise Sources," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 326-330.

F.L. Walls, D.B. Percival, and W.R. Irelan, "Biases and Variances of Several FFT Spectral Estimators as a Function of Noise Type and Number of Samples," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 336-341.

D. Allan, H. Hellwig, P. Kartaschoff, J. Vanier, J. Vig, G.M.R. Winkler, and N.F. Yannoni, "Standard Terminology for Fundamental Frequency and Time Metrology," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 419-425.

F.L. Walls, A.J.D. Clements, C.M. Felton, M.A. Lombardi, and M.D. Vanek, "Extending the Range and Accuracy of Phase Noise Measurements," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 432-441.

D.W. Allan, "Time and Frequency (Time-Domain) Characterization, Estimation, and Prediction of Precision Clocks and Oscillators," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 34, pp. 647-654, 1987.

D.W. Allan, "Should the Classical Variance Be Used as a Basic Measure in Standards Metrology?," IEEE Trans. Instrum. Meas., vol. 36, pp. 646-654, 1987.

D.W. Allan, "Millisecond Pulsar Rivals Best Atomic Clock Stability," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1987, pp. 2-11.

D.W. Allan, "A Study of Long-Term Stability of Atomic Clocks," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 375-379.

F.L. Walls and D.W. Allan, "Measurements of Frequency Stability," Proc. IEEE, vol. 74, 1986, pp. 162-168.

J.A. Barnes and D.W. Allan, "Time Scale Stabilities Based on Time and Frequency Kalman Filters," Proc. 39th Frequency Control Symp., Philadelphia, PA, May 29-31, 1985, pp. 107-109.

D.W. Allan, "Characterization, Optimum Estimation, and Time Prediction for Precision Clocks," Proc. 17th Ann. PTTI Mtg., Ft. Monmouth, NJ, May 27-29, 1985, pp. 45-67.

S.R. Stein, "Frequency and Time—Their Measurement and Characterization," Precision Frequency Control, Vol 2, E.A. Gerber and A. Ballato, eds. (Academic Press), vol. 2, pp. 191-231, 1985.

D.W. Allan, "Clock Characterization Tutorial," Proc. 15th Ann. PTTI Mtg., Washington, DC, Dec. 6-8, 1983, pp. 259-475.

J.A. Barnes, R.H. Jones, P.V. Tryon, and D.W. Allan, "Stochastic Models for Atomic Clocks," 14th Ann. PTTI Mtg., Greenbelt, MD, Nov. 30-Dec. 2, pp. 295-306, 1982.

D.A. Howe, D.W. Allan, and J.A. Barnes, "Properties of Signal Sources and Measurement Methods," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. A1-A47.

D.W. Allan and J.A. Barnes, "A Modified "Allan Variance" with Increased Oscillator Characterization Ability," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. 470-475.

D.W. Allan and H. Hellwig, "Time Deviation and Time Prediction Error for Clock Specification, Characterization, and Application," Proc. Position Location and Navigation Symp. (PLANS), 1978, pp. 29-36.

D.W. Allan, "A Review of Flicker Noise Frequency Instabilities in Precision Frequency Standards," Proc. Symp. on 1/f Fluctuation, Tokyo, Japan, 1977, pp. 158-172.

J.A. Barnes, "A Simulation of the Fluctuations of International Atomic Time," NBS TN 689, 1976.

H. Hellwig, "Clocks and Measurements of Time and Frequency," WESCON Technical Conf., vol. 20, pp. 1-14, 1976.

J.A. Barnes, "Models for the Interpretation of Frequency Stability Measurements and Errata," NBS TN 683, 1976.

D.A. Howe, "Frequency Domain Stability Measurements: A Tutorial Introduction," NBS TN 679, 1976.

D.W. Allan, "The Measurement of Frequency and Frequency Stability of Precision Oscillators," NBS TN 669, 1975.

D.W. Allan, "The Measurement of Frequency and Frequency Stability of Precision Oscillators," NBS TN 669, 1975.

J.H. Shoaf, "Specification and Measurement of Frequency Stability," NBSIR 74-396, pp. 1-40, 1974.

D.W. Allan, J.H. Shoaf, and D. Halford, "Statistics of Time and Frequency Data Analysis," Chapter 8, from Characterization of Frequency Stability, pp. 151-204, 1973.

W. Ganter, "Modeling of Atomic Clock Performance and Detection of Abnormal Clock Behavior," NBS TN 636, 1973.

J.H. Shoaf, D. Halford, and A.S. Risley, "Frequency Stability Specification and Measurement: High Frequency and Microwave Signals," NBS TN 632, 1973.

K. Yoshimura, "The Generation of an Accurate and Uniform Time Scale With Calibrations and Prediction," NBS TN 626, 1972.

J.A. Barnes and S. Jarvis, Jr., "Efficient Numerical and Analog Modeling of Flicker Noise Processes," NBS TN 604, 1971.

J.A. Barnes, A.R. Chi, L.S. Cutler, D.J. Healey, D.B. Leeson, T.E. McGunigal, J.A. Mullen, Jr., W.L. Smith, R.L. Sydnor, R.F.C. Vessot, and G.M.R. Winkler, "Characterization of Frequency Stability," IEEE Tran. Instrum. Meas., vol. 20, pp. 105-120, 1971.

D.W. Allan and J.E. Gray, "Comments on the Oct. 1970 Metrologia Paper "The U.S. Naval Observatory Clock Time Reference and the Performance of a Sample of Atomic Clocks,"" Int. J. Sci. Metrology, vol. 7, pp. 79-82, 1971.

J.A. Barnes, A.R. Chi, L.S. Cutler, D.J. Healey, D.B. Leeson, T.E. McGunigal, J.A. Mullen, W.L. Smith, R. Sydnor, R.F.C. Vessot, and G.M.R. Winkler, "Characterization of Frequency Stability," NBS TN 394, 1970.

J.A. Barnes, "Frequency Measurement Errors of Passive Resonators Caused by Frequency-Modulated Exciting Signals," IEEE Trans. Instrum. Meas., vol. 19, pp. 148-152, 1970.

D.W. Allan and J.A. Barnes, "Some Statistical Properties of LF and VLF Propagation," Proc. 13th AGARD Symp., 1970, pp. 219-230.

J.A. Barnes, "Studies of Frequency Stability," NBS Report 9739, pp. 1-16, 1969.

G.E. Hudson, D. W. Allan, J.A. Barnes, R. Hall, J.D. Lavanceau, and G.M.R. Winkler, "A Coordinate Frequency and Time System," Proc. 23rd Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 6-8, 1969, pp. 249-262.

J.A. Barnes, "Tables of Bias Functions, B_1 and B_2, for Variances Based On Finite Samples of Processes with Power Law Spectral Densities," NBS TN 375, 1969.

G.E. Hudson and J.A. Barnes, "Clock Error Statistics as a Renewal Process," Proc. 22nd Ann. Symp. Freq. Control, Fort. Monmouth, NJ, Apr. 22-24, 1968, pp. 384-413.

D. Halford, "A General Mechanical Model for $|f|^{\alpha}$ Spectral Density Random Noise with Special Reference to Flicker Noise $1/|f|$," Proc. IEEE, vol. 56, 1968, pp. 251-258.

G.E. Hudson, "On the Correct-Reading Rate and the Distribution of Time Between Correct Readings for Clock Ensembles," NBS Report 9700, pp. 1-38, 1968.

J.A. Barnes and D.W. Allan, "An Approach to the Prediction of Coordinated Universal Time," Frequency, vol. 5, pp. 3-8, 1967.

J.A. Barnes, "The Generation and Recognition of Flicker Noise," NBS Report 9284, pp. 1-52, 1967.

D.W. Allan, "Statistics of Atomic Frequency Standard," Proc. IEEE, vol. 54, 1966, pp. 221-231.

J.A. Barnes, "Atomic Timekeeping and the Statistics of Precision Signal Generators," Proc. IEEE, vol. 54, 1966, pp. 207-220.

J.A. Barnes and D.W. Allan, "A Statistical Model of Flicker Noise," Proc. IEEE, vol. 54, 1966, pp. 176-178.

J.A. Barnes and D.W. Allan, "Two Papers on the Statistics of Precision Frequency Generators," NBS Report 8878, pp. 1-40, 1965.

J.A. Barnes and D.W. Allan, "Effects of Long-Term Stability on the Definition and Measurement of Short-Term Stability," Proc. IEEE-NASA Symp. on the Definition and Measurement of Short-Term Frequency Stability, 1964, pp. 119-123.

L. Fey, "Obscurities of Oscillator Noise," Proc. IEEE, 1964, pp. 104-105.

J.A. Barnes and R.C. Mockler, "The Power Spectrum and Its Importance in Precise Frequency Measurements," IRE Trans. Instrum., vol. 9, pp. 149-155, 1960.

J.A. Barnes and R.C. Mockler, "The Power Spectrum and Its Importance in Precise Frequency Measurements," NBS Report 6709, pp. 1-30, 1960.

W. Atkinson and L. Fey, "Statistical Aspects of Clock Errors," NBS Report 6085, pp. 1-14, 1960.

TIME/THE SECOND

D.B. Sullivan, D.W. Allan, D.A. Howe, and F.L. Walls, "Characterization of Clocks and Oscillators," NIST Tech. Note 1337, pp. 1-342, 1990.

D.W. Allan, "Time and Frequency (Time-Domain) Characterization, Estimation, and Prediction of Precision Clocks and Oscillators," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 34, pp. 647-654, 1987.

F.L. Walls and D.W. Allan, "Measurements of Frequency Stability," Proc. IEEE, vol. 74, 1986, pp. 162-168.

S.R. Stein, "Frequency and Time—Their Measurement and Characterization," Precision Frequency Control, vol. 2, E.A. Gerber and A. Ballato, eds. (Academic Press), vol. 2, pp. 191-231, 1985.

S. Stein, D. Glaze, J. Levine, J. Gray, D. Hilliard, D. Howe, and L.A. Erb, "Automated High-Accuracy Phase Measurement System," IEEE Trans. Instrum. Meas., vol. 32, pp. 227-231, 1983.

S. Stein, D. Glaze, J. Levine, J. Gray, D. Hilliard, D. Howe, and L.Erb, "Performance of an Automated High Accuracy Phase Measurement System," Proc. 36th Ann. Symp. Freq. Control, Philadelphia, PA, June 2-4, 1982, pp. 314-320.

F.L. Walls, "New Horizons and Old Pitfalls in Frequency and Time Metrology," Proc. 2nd Freq. Stand. and Metrology Symp., 1976, pp. 489-517.

D.A. Howe, "Frequency Domain Stability Measurements: A Tutorial Introduction," NBS TN 679, 1976.

D.W. Allan, "Report on NBS Dual Mixer Time Difference System (DMTD) Built for Time-Domain Measurements Associated with Phase 1 of GPS," NBSIR 75-827, pp. 1-18, 1976.

D.W. Allan, "The Measurement of Frequency and Frequency Stability of Precision Oscillators," NBS TN 669, 1975.

D.W. Allan, "Picosecond Time Difference Measurement System," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 404-411.

F.L. Walls and A.E. Wainwright, "Measurement of the Short-Term Stability of Quartz Crystal Resonators and the Implications for Crystal Oscillator Design and Applications," IEEE Trans. Instrum. Meas., vol. 24, pp. 15-20, 1975.

J.H. Shoaf, "Specification and Measurement of Frequency Stability," NBSIR 74-396, pp. 1-40, 1974.

J.E. Gray and D.W. Allan, "A Method for Estimating the Frequency Stability of an Individual Oscillator," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 243-246.

A.E. Wainwright, F.L. Walls, and W.D. McCaa, "Direct Measurements of the Inherent Frequency Stability of Quartz Crystal Resonators," Proc. 28th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 23-31, 1974, pp. 177-179.

J.H. Shoaf, D. Halford, and A.S. Risley, "Frequency Stability Specification and Measurement: High Frequency and Microwave Signals," NBS TN 632, 1973.

J.A. Barnes, A.R. Chi, L.S. Cutler, D.J. Healey, D.B. Leeson, T.E. McGunigal, J.A. Mullen, Jr., W.L. Smith, R.L. Sydnor, R.F.C. Vessot, and G.M.R. Winkler, "Characterization of Frequency Stability," IEEE Tran. Instrum. Meas., vol. 20, pp. 105-120, 1971.

J.A. Barnes, A.R. Chi, L.S. Cutler, D.J. Healey, D.B. Leeson, T.E. McGunigal, J.A. Mullen, W.L. Smith, R. Sydnor, R.F.C. Vessot, and G.M.R. Winkler, "Characterization of Frequency Stability," NBS TN 394, 1970.

K.M. Evenson, J.S. Wells, and L.M. Matarrese, "Defining the Speed of Light: A Combination Time, Frequency, and Length Standard: Recent Progress Toward Measuring the Frequency of Visible Light," Proc. Int. Conf. on Precision Measurements and Fundamental Constants (PMFC), 1970, pp. 67-69.

A.V. Astin, "Standards of Measurement," Sci. Am., vol. 218, pp. 50-62, 1968.

R.E. Beehler, R.C. Mockler, and J.M. Richardson, "Cesium Beam Atomic Time and Frequency Standards," Int. J. Sci. Metrology, vol. 1, pp. 114-131, 1965.

"World Sets Atomic Definition of Time," Tech. News Bulletin, pp. 209-210, 1964.

G.E. Hudson and W. Atkinson, "The Redefinition of the Second and the Velocity of Light," Phys. Today, vol. 16, pp. 30-32, 1963.

TIME COORDINATION

C.M. Volk and J. Levine, "Analytical Estimation of Carrier Multipath Bias on GPS Position Measurements," NIST Tech. Note 1366, pp. 1-60, 1994.

M.A. Weiss, G. Petit, and S. Shattil, "A Comparison of GPS Broadcast and DMA Precise Ephemerides," Proc. 25th Ann. PTTI Mtg., Marina Del Ray, CA, Nov. 29-Dec. 2, 1993, pp. 293-306.

J. Levine, "The NIST Internet Time Services," Proc. 25th Ann. PTTI Mtg., Marina Del Ray, CA, Nov. 29-Dec. 2, 1993, pp. 505-511.

D. Kirchner, H. ReBler, P. Grudler, F. Baumont, Ch. Veillet, W. Lewandowski, D.W. Hanson, W. Klepczynski, and P. Uhrich, "Comparison of GPS and Two-Way Satellite Time Transfer over a Baseline of 800 Km," Metrologia, vol. 30, pp. 183-192, 1993.

D. Kirchner, U. Thyr, H. Ressler, R. Robnik, P. Grudler, F. Baumont, Ch. Veillet, W. Lewandowski, D.W. Hanson, A. Clements, J. Jespersen, D. Howe, et al., "Comparison of Two-Way Satellite Time Transfer and GPS Common-View Time Transfer Between OCA and TUG," Proc. 23rd Ann. PTTI Mtg., Pasadena, CA, Dec. 3-5, 1991, pp. 71-88.

W. Lewandowski, C. Thomas, and D.W. Allan, "CGSIC Subcommittee on Time and CCDS Group of Experts on GPS Standardization," Proc. 4th Annual Ion GPS Int. Technical Mtg., Albuquerque, NM, Aug. 18-22, 1991, pp. 207-213.

D. Davis, M.A. Weiss, K. Davies, and G. Petit, "Improving GPS Time Transfer Accuracy with the NIST Ionospheric Measurement System," Proc. 4th Annual Ion GPS Int. Technical Mtg., Albuquerque, NM, Aug. 18-22, 1991, pp. 253-268.

P. Daly, I.D. Kitching, D.W. Allan, and T.K. Peppler, "Frequency and Time Stability of GPS and GLONASS Clocks," Int. J. Satellite Communications, vol. 9, pp. 11-22, 1991.

D.A. Howe and D.D. Davis, "A Direct Sequence Spread-Spectrum Modem Design for Time Transfers via Geostationary Satellites," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 13-15, 1991, pp. 89-95.

W. Lewandowski, G. Petit, C. Thomas, and M.A. Weiss, "GPS Time Closure Around the World Using Precise Ephemerides, Ionospheric Measurements and Accurate Antenna Coordinates," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 215-220.

P. Uhrich, R. Tourde, M. Granveaud, P. Grudler, F. Baumont, Ch. Veillet, D. Feraudy, J. M. Mangin, J. Gaignebet, J.L. Hatat, D.J. Hanson, A. Clements, J. Jespersen, M. Lombardi, et al., "Preliminary Comparison

of Time Transfers via LASSO, GPS and Two-Way Satellite," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 96-104.

D.W. Allan and J. Levine, "A Rubidium Frequency Standard and a GPS Receiver: Remotely Steered Clock System with Good Short-Term and Long-Term Stability," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 151-160.

P. Daly, I.D. Ketching, D.W. Allan, and T.K. Peppler, "Frequency and Time Stability of GPS and GLONASS Clocks," Proc. 44th Ann. Symp. Freq. Control, Baltimore, MD, May 23-25, 1990, pp. 127-139.

D.A. Howe, "Time Tracking Error in Direct-Sequence Spread-Spectrum Networks Due to Coherence Among Signals," IEEE Trans. Communications, vol. 38, pp. 2103-2105, 1990.

W. Lewandowski, G. Petit, C. Thomas, and M.A. Weiss, "The Use of Precise Ephemerides, Ionospheric Data and Corrected Antenna Coordinates in a Long-Distance GPS Time Transfer," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 547-557.

D.W. Allan, M. Granveaud, W.J. Klepczynski, and W. Lewandowski, "GPS Time Transfer with Implementation of Selective Availability," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 145-154.

C. Veillet, D. Feraudy, J.M. Torre, J.F. Mangin, P. Grudler, F. Baumont, J. Gaignebet, J.L. Hatat, D.W. Hanson, A. Clements, J. Jespersen, M. Lombardi et al., "LASSO, Two-Way and GPS Time Comparisons: A (Very) Preliminary Status Report," Proc. 22nd Ann. PTTI Mtg., Vienna, VA, Dec. 4-6, 1990, pp. 575-582.

D.W. Allan, "Remote Time and Frequency Comparisons Now and in the Future," Proc. 4th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 13-15, 1990, pp. 619-630.

D.A. Howe, D.W. Hanson, J.L. Jespersen, and M.A. Lombardi, "Satellite Two-Way Time Transfer: Fundamentals and Recent Progress," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 117-128.

W. Lewandowski and M.A. Weiss, "The Use of Precise Ephemerides for GPS Time Transfer," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 95-105.

D.W. Allan, "Synchronization of Clocks," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 1-16.

M.A. Weiss, "Apparent Diurnal Effects in the Global Positioning System," IEEE Trans. Instrum. Meas., vol. 38, pp. 991-997, 1989.

J. Jespersen, "Impact of Atmospheric Nonreciprocity on Satellite Two-Way Time Transfers," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 186-192.

W. Lewandowski, R.J. Douglas, W.J. Klepczynski, W. Strange, J. Sueter, and M.A. Weiss, "The Positioning of GPS Antennas in Time-Keeping Laboratories of North America," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 218-224.

L.B. Veenstra and D.W. Hanson, "Two-Way Satellite Time Transfers between and within North America and Europe," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 179-185.

D.W. Hanson, "Fundamentals of Two-Way Time Transfer by Satellite," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 174-178.

D.A. Howe, D.W. Hanson, J.L. Jespersen, M.A. Lombardi, W.J. Klepczynski, P.J. Wheeler, M. Miranian, W. Powell, J. Jeffries, and A. Myers, "NIST-USNO Time Comparisons Using Two-Way Satellite Time Transfers," Proc. 43rd Ann. Symp. Freq. Control, Denver, CO, May 31-June 2, 1989, pp. 193-198.

D. Davis, M. Weiss, and M. Vidmar, "A Codeless Ionospheric Calibrator for Time Transfer Applications," Proc. Ion GPS-89, Int. Technical Mtg. of the Satellite Division of the Institute of Navigation, Colorado Springs, CO, Sept. 15, 1989, pp. 455-459.

M.A. Weiss and D.D. Davis, "A Calibration of GPS Equipment in Japan," Proc. 20th Ann. PTTI Mtg., Vienna, VA, Nov. 29-Dec. 1, 1989, pp. 101-109.

M.A. Weiss, "The Design of Kalman Smoothers for Global Positioning System Data," IEEE Trans. Instrum. Meas., vol. 38, pp. 652-657, 1989.

D.W. Allan, M.A. Weiss, and T.K. Peppler, "In Search of the Best Clock," IEEE Trans. Instrum. Meas., vol. 38, pp. 624-630, 1989.

D.W. Allan, "In Search of the Best Clock—An Update," Proc. 4th Symp. on Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, pp. 29-36.

W.J. Klepczynski, P.J. Wheeler, W. Powell, J. Jeffries, A. Myers, R.T. Clarke, W. Hanson, J. Jespersen, and D. Howe, "Preliminary Comparison Between GPS and Two-Way Satellite Time Transfer," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 472-477.

D.A. Howe, "High-Accuracy Time Transfer via Geostationary Satellites: Preliminary Results," IEEE Trans. Instrum. Meas., vol. 37, pp. 418-423, 1988.

D.H. Howe, "Ku-Band Satellite Two-Way Timing Using a Very Small Aperture Terminal (VSAT)," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1988, pp. 149-160.

D.W. Allan and P.P. Lin, "Estimating Combined Errors Due to Propagation and Ephemeris and their Effect on Time and Frequency Transfer," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1988, pp. 144-148.

D.W. Allan and P.P. Lin, "Estimating Combined Errors due to Propagation and Ephemeris and Their Effect on Time and Frequency Transfer," Proc. 41st Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1987, pp. 144-148.

J.R. Clynch, B.W. Tolman, M.A. Weiss, D.W. Allan and D. Davis, "Dual Frequency P-Code Time Transfer Experiment," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 25-32.

D.A. Howe, "Progress Toward One-Nanosecond Two-Way Transfer Accuracy Using Ku-Band Geostationary Satellites," IEEE Trans. Ultrason., Ferroelec. Freq. Cont., vol. 34, pp. 639-646, 1987.

M.A. Weiss and D.W. Allan, "An NBS Calibration Procedure for Providing Time and Frequency at a Remote Site by Weighting and Smoothing of GPS Common View Data," IEEE Trans. Instrum. Meas., vol. 36, pp. 572-578, 1987.

D.W. Allan, "A Study of Long-Term Stability of Atomic Clocks," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 375-379.

W. Lewandowski, M.A. Weiss, and D. Davis, "A Calibration of GPS Equipment at Time and Frequency Standards Laboratories in the USA and Europe," Metrologia, vol. 24, pp. 181-186, 1987.

D.A. Howe, "Stability Measurements of Ku-Band Spread Spectrum Equipment Used for Two-Way Time Transfer," Proc. 18th Ann. PTTI Mtg., Washington, DC, Dec. 2-4, 1986, pp. 437-445.

M.A. Weiss and D.W. Allan, "Using Multiple Reference Stations to Separate the Variances of Noise Components in the Global Positioning System," Proc. 40th Ann. Symp. Freq. Control, Philadelphia, PA, May 28-30, 1986, pp. 394-404.

W.J. Klepczynski, H.F. Fliegel, and D.W. Allan, "GPS Time Steering," Proc. 18th Ann. PTTI Mtg., Washington, DC, Dec. 2-4, 1986, pp. 237-249.

D.W. Allan and N. Ashby, "Coordinate Time in the Vicinity of the Earth," Int. Astronomical Union Symp. No. 114, Relativity in Celestial Mechanics and Astrometry (D. Reidel Publ. Co), pp. 299-313, 1986.

R.E. Beehler and D.W. Allan, "Recent Trends in NBS Time and Frequency Distribution Services," Proc. IEEE, vol. 74, 1986, pp. 155-157.

M.A. Weiss, "Weighting and Smoothing of Data in GPS Common View Time Transfer," Proc. 17th Ann. PTTI Mtg., Ft. Monmouth, NJ, May 27-29, 1985, pp. 261-275.

D.W. Allan, D.D. Davis, M. Weiss, A. Clements, B. Guinot, M. Granveaud, K. Dorenwendt, B. Fischer, P. Hetzel, S. Aoki, M.-K. Fujimoto, L. Charron, and N. Ashby, "Accuracy of International Time and Frequency Comparisons via Global Positioning System Satellites in Common-View," IEEE Trans. Instrum. Meas., vol. 34, pp. 118-125, 1985.

D.W. Allan, M.A. Weiss, and N. Ashby, "Around-the-World Relativistic Sagnac Experiment," Science, vol. 228, pp. 69-70, 1985.

D.W. Allan, "Frequency and Time Coordination, Comparison, and Dissemination," Precision Frequency Control, E.A. Gerber and A. Ballato, eds. (Academic Press), vol. 2, pp. 233-273, 1985.

D.D. Davis and A.D.J. Clements, "A Simplified GPS C/A Receiver Front End with Low Noise Performance," Proc. 16th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1984, pp. 467-474.

N. Ashby and D.W. Allan, "Coordinate Time On and Near the Earth," Phys. Rev. Lett., vol. 53, pp. 1858, 1984.

S.R. Stein, G. Kamas, and D.W. Allan, "New Time and Frequency Services at the National Bureau of Standards," Proc. 15th Ann. PTTI Mtg., Washington, DC, Dec. 6-8, 1983, pp. 17-27.

D.W. Allan and M. Weiss, "Separating the Variances of Noise Components in the Global Positioning System," Proc. 15th Ann. PTTI Mtg., Washington, DC, Dec. 6-8, 1983, pp. 115-131.

D.W. Allan, "National and International Time and Frequency Comparisons," Proc. 37th Ann. Symp. Freq. Control, Philadelphia, PA, June 1-3, 1983, pp. 55-60.

M. Weiss, "Position Location Using Sequential GPS Measurements," Position Location and Navigation Symp., PLANS'82, pp. 275-278, 1982.

R. Decher, D.W. Allan, C.O. Alley, C. Baugher, B.J. Duncan, R.F.C. Vessot, and G.M.R. Winkler, "High-Accuracy Global Time and Frequency Transfer with a Space-Borne Hydrogen Maser Clock," Proc. 14th Ann. PTTI Mtg., Greenbelt, MD, Nov. 20-Dec.2, 1982, pp. 205-221.

D.W. Allan, C.O. Alley, Jr., R. Decher, R.F.C. Vessot, and G. Winkler, "Shuttle Experiment to Demonstrate High-Accuracy Global Time and Frequency Transfer," IEEE Trans. Geosci. Remote Sensing, vol. 20, pp. 321-325, 1982.

D.W. Allan and J.A. Barnes, "Optimal Time and Frequency Transfer Using GPS Signals," Proc. 36th Ann. Symp. Freq. Control, Philadelphia, PA, June 2-4, 1982, pp. 378-387.

D.W. Allan, C.O. Alley, N. Ashby, R. Decher, R.F.C. Vessot, and G.M.R. Winkler, "Ultra-Accurate International Time and Frequency Comparison via an Orbiting Hydrogen-Maser Clock," J. Phys. (Paris), vol. Colloque C8, pp. 395-413, 1981.

D.D. Davis, M.A. Weiss, A. Clements, and D.W. Allan, "Unprecedented Syntonization and Synchronization Accuracy via Simultaneous Viewing with GPS Receivers; Construction Characteristics of an NBS/GPS Receiver," Proc. 13th Ann. PTTI Mtg., Washington, DC, Dec. 1-3, 1981, pp. 527-544.

D.D. Davis, M. Weiss, A. Clements, and D.W. Allan, "Construction and Performance Characteristics of a Prototype NBS/GPS Receiver," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981.

R.E. Beehler, "Time/Frequency Services of the U.S. National Bureau of Standards and Some Alternatives for Future Improvement," J. Electron. Telecommun. Engineers, vol. 27, 1981, pp. 389-402.

D.W. Allan, "Some Methods of Maintaining and/or Generating Time and Frequency at Arbitrary Points on Surface of the Earth," J. Instit. Electron. Telecommun. Engineers, vol. 27, pp. 383-388, 1981.

J.L. Jespersen, M. Weiss, D.D. Davis, and D.W. Allan, "Global Positioning System for Accurate Time and Frequency Transfer and for Cost-Effective Civilian Navigation," Proc. IEEE PLANS '80 Position Location and Navigation Symp., Dec. 8-11, 1980, pp. 468.

D.W. Allan, C.O. Alley, R. Decher, R.F.C. Vessot, and G.M.R. Winkler, "Shuttle Time and Frequency Transfer Experiment," NASA Technical Memorandum NASA TM-78288, 1980.

R. Decher, D.W. Allan, C.O. Alley, R.F.C. Vessot, and G.M.R. Winkler, "A Space System for High-Accuracy Global Time and Frequency Comparison of Clocks," Proc. 12th Ann. PTTI Mtg., Greenbelt, MD, Dec. 2-4, 1980, pp. 99.

D.W. Allan and M.A. Weiss, "Accurate Time and Frequency Transfer During Common-View of a GPS Satellite," Proc. 34th Ann. Symp. Freq. Control, Philadelphia, PA, May 28-30, 1980, pp. 334-346.

N. Ashby and D.W. Allan, "Practical Implications of Relativity for a Global Coordinate Time Scale," Radio Sci., vol. 14, pp. 649-669, 1979.

J.L. Jespersen, "Some Implications of Reciprocity for Two-Way Clock Synchronization," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1979, pp. 171-184.

C.C. Costain, H. Daams, J.S. Boulanger, D.W. Hanson, and W.J. Klepczynski, "Two-Way Time Transfers Between NRC/NBS and NRC/USNO via the Hermes (CTS) Satellite," Proc. 10th Ann. PTTI Mtg., Greenbelt, MD, Nov. 28-30, 1978, pp. 585-600.

H. Hellwig, D.W. Allan, S.R. Stein, and K.A. Prichard, "Transcontinental and Intercontinental Portable Clock Time Comparison," IEEE Trans. Instrum. Meas., vol. 27, pp. 65-68, 1978.

C. Costain, J.-S. Boulanger, H. Daams, D.W. Hanson, R.E. Beehler, A.J. Clements, D.D. Davis, W.J. Klepczynski, L. Veenstra, J. Kaiser, B. Guinot, J. Azoubib, P. Parcelier, G. Freon, and M. Brunet, "Two-Way Time Transfer via Geostationary Satellites NRC/NBS, NCR/USNO," Proc. 11th Ann. PTTI Mtg., Greenbelt, MD, Nov. 27-29, 1978, pp. 499-515.

H. Hellwig, "Precise Time and Frequency," Phys. Technology, vol. 9, pp. 266-267, 1978.

R.L. Easton, L.C. Fisher, D.W. Hanson, H. Hellwig, and L.J. Rueger, "Dissemination of Time and Frequency by Satellite," Proc. IEEE, vol. 64, 1976, pp. 1482-1493.

D.D. Davis, "A Microprocessor Data Logging System for Utilizing TV as a Time-Frequency Transfer Standard," Proc. 8th Ann. PTTI Mtg., Washington, DC, Nov. 20-Dec. 2, 1976, pp. 167-181.

H. Hellwig and A.E. Wainwright, "A Portable Rubidium Clock for Precision Time Transport," Proc. 7th Ann. PTTI Mtg., Greenbelt, MD, Dec. 2-4, 1975, pp. 143-159.

H. Hellwig and A.E. Wainwright, "Sub-Microsecond Time Transport with a Rubidium Portable Clock," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 384-386.

N. Ashby, "An Earth-Based Coordinate Clock Network," NBS TN 659, 1975.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

J.L. Jespersen and L. Fey, "Time-Telling Techniques," IEEE Spectrum, vol. 9, pp. 51-58, 1972.

D.W. Allan, H.E. Machlan, and J. Marshall, "Time Transfer Using Nearly Simultaneous Reception Times of a Common Transmission," Proc. 26th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 6-8, 1972, pp. 309-316.

R.E. Beehler, "Spaceborne Clock System: Some Alternatives for a Proposed NASA Experiment," NBS Report 10 735, pp. 1-87, 1971.

D.W. Allan, B.E. Blair, D.D. Davis, and H.E. Machlan, "Precision and Accuracy of Remote Synchronization via Portable Clocks, Loran-C, and Network Television Broadcasts," Proc. 25th Ann. Symp. Freq. Control, Ft. Monmouth, NJ, June 6-8, 1971, pp. 195-208.

D.W. Allan, S. Leschiutta, and G. Rovera, "TV Frame Pulses Used for Precision Time Synchronization and Their Noise Distribution," Alta Frequencza 39, pp. 180-183, 1970.

G.E. Hudson, D. W. Allan, J.A. Barnes, R. Hall, J.D. Lavanceau, and G.M.R. Winkler, "A Coordinate Frequency and Time System," Proc. 23rd Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 6-8, 1969, pp. 249-262.

L.E. Gatterer, P.W. Bottone, and A.H. Morgan, "Worldwide Clock Synchronization Using a Synchronous Satellite," IEEE Trans. Instrum. Meas., vol. 17, pp. 372-378, 1968.

J.L. Jespersen, G. Kamas, L.E. Gatterer, and P.F. MacDoran, "Satellite VHF Transponder Time Synchronization," Proc. IEEE, vol. 56, 1968, pp. 1202-1206.

L.E. Gatterer, "Clock Synchronization Experiments at VHF Utilizing the ATS-1 Transponder," NASA ATS Report, 1968.

D.W. Allan, L. Fey, H.E. Machlan, and J.A. Barnes, "An Ultra-Precise Time Synchronization System Designed by Computer Simulation," in Frequency, pp. 1-5, 1968.

J.A. Barnes, "The Development of an International Atomic Time Scale," Proc. IEEE, vol. 55, 1967, pp. 822-826.

G.E. Hudson, "A Note Concerning the Effect of Gravity on an Atomic Clock," NBS Report 9273, pp. 1-3, 1967.

L. Fey and C.H. Looney, Jr., "A Dual Frequency VLF Timing System," IEEE Trans. Instrum. Meas., vol. 15, pp. 190-195, 1966.

L. Fey, J.A. Barnes, and D.W. Allan, "An Analysis of a Low Information Rate Time Control Unit," Proc. 20th Ann. Symp. Freq. Control, Monmouth, NJ, Apr. 19-21, 1966, pp. 629-635.

J.A. Barnes and R.L Fey, "Synchronization of Two Remote Atomic Time Scales," Proc. IEEE, 1963, pp. 216.

J. Newman, L. Fey, and W.R. Atkinson, "A Comparison of Two Independent Atomic Time Scales," Proc. IEEE, vol. 51, 1963.

R.L. Fey, J.B. Milton, and A.H. Morgan, "Remote Phase Control of Radio Station WWVL," Nature, vol. 193, 1962, pp. 1063-1064.

TIME SCALES

D.W. Allan and M.A. Weiss, "The Variance of Predictability of Hydrogen Masers and of Primary Cesium Standards in Support of a Real Time Prediction of UTC," Proc. 8th European Freq. and Time Forum, Weihenstephan, Germany, Mar. 9-11, 1994, pp. 1049-1066.

M.A. Weiss and F.L. Walls, "Preliminary Evaluation of Time Scales Based on Hydrogen Masers," Proc. 8th European Freq. and Time Forum, Weihenstephan, Germany, Mar. 9-11,, 1994, pp. 417-428.

A. Lepek and F.L. Walls, "Cross Correlation Analysis Improves Time-Domain Measurements," Proc. 1993 IEEE Int. Freq. Control Symp., Salt Lake City, UT, June 2-4, 1993, pp. 312-320.

M.A. Weiss and T. Weissert, "Sifting Through Nine Years of NIST Clock Data with TA2," Proc. 7th European Freq. and Time Forum, Neuchatel, Switzerland, Mar. 16-18, 1993, pp. 199-210.

M.A. Weiss, D.W. Allan, D.D. Davis, and J. Levine, "Smart Clock: A New Time," IEEE Trans. Instrum. Meas., vol. 41, pp. 915-918, 1992.

D.W. Allan, "Time and Frequency Metrology: Current Status and Future Considerations," Proc. 5th European Freq. and Time Forum, Bescanson, France, Mar. 13-15, 1991, pp. 1-9.

M.A. Weiss and T. Weissert, "Promise into Practice: Implementing TA2 on Real Clocks at NIST," Proc. 5th European Freq. and Time Forum, Besançon, France, Mar. 12-14, 1991, pp. 442-448.

M. Weiss and T. Weissert, "AT2, A New Time Scale Algorithm: AT1 Plus Frequency Variance," Metrologia, vol. 28, pp. 65-74, 1991.

G. Kamas and M.A. Lombardi, "Time and Frequency Users Manual," NBS SP 559 (Revised), 1990.

M.A. Weiss and T. Weissert, "A New Time Scale Algorithm AT1 Plus Frequency Variance," Proc. 21st Ann. PTTI Mtg., Redondo Beach, CA, Nov. 28-30, 1989, pp. 343-355.

M.A. Weiss, D.W. Allan, and T.K. Peppler, "A Study of the NBS Time Scale Algorithm," IEEE Trans. Instrum. Meas., vol. 38, pp. 631-635, 1989.

D.W. Allan, M.A. Weiss, and T.K. Peppler, "In Search of the Best Clock," IEEE Trans. Instrum. Meas., vol. 38, pp. 624-630, 1989.

D.W. Allan, "In Search of the Best Clock—An Update," Proc. 4th Symp. on Freq. Stand. and Metrology, Ancona, Italy, Sept. 5-9, 1988, pp. 29-36.

D.W. Allan, "Report from Turin, The Third International Atomic Time Scale Algorithm Symp.," Proc. 20th Ann. PTTI Mtg., Redondo Beach, CA, Nov. 29-Dec. 1, 1988, pp. 237-250.

D.W. Allan and T.K. Peppler, "Ensemble Time and Frequency Stability of GPS Satellite Clocks," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 465-467.

A. Shenhar, W. Litman, A. Lepek, A. Chitrinovitch, D.W. Allan, and T.K. Peppler, "Israel's New Synchronized Time Scale, UTC(INPL)," Proc. 42nd Ann. Symp. Freq. Control, Baltimore, MD, June 1-3, 1988, pp. 485-489.

J. Levine and D.W. Allan, "The Steering of a Real Time Clock to UTC(NBS) and to UTC," Proc. 3rd Int. Time Scale Algorithm Symp., Turin, Italy, Sept. 12-13, 1988, pp. 239-254.

D.W. Allan, "Notes on Variance Testing of Time Scale Algorithms and Clock Sets," Proc. 3rd Int. Time Scale Algorithm Symp., Turin, Italy, Sept. 12-13, 1988, pp. 361-363.

F. Varnum, D.R. Brown, D.W. Allan, and T.K. Peppler, "Comparison of Time Scales Generated with the NBS Ensembling Algorithm," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 13-22.

D.W. Allan, "A Study of Long-Term Stability of Atomic Clocks," Proc. 19th Ann. PTTI Mtg., Redondo Beach, CA, Dec. 1-3, 1987, pp. 375-379.

W.J. Klepczynski, H.F. Fliegel, and D.W. Allan, "GPS Time Steering," Proc. 18th Ann. PTTI Mtg., Washington, DC, Dec. 2-4, 1986, pp. 237-249.

R. H. Jones and P. V. Tryon, "Estimating Time from Atomic Clocks," J. Res., vol. 83, pp. 17-24, 1983.

J.E. Gray, "Clock Synchronization and Comparison: Problems, Techniques and Hardware," NBS TN 691, 1976.

H. Hellwig, D.W. Allan, and F.L. Walls, "Time and Frequency," Proc. 5th Int. Conf. on Atomic Masses and Fundamental Constants (AMCO-5), Paris, France, June 2-6, 1975, in Atomic Masses and Fundamental Constants, vol. 5, J.H. Sanders, ed. (Plenum Press), 1975, pp. 305-311.

D.W. Allan, "Picosecond Time Difference Measurement System," Proc. 29th Ann. Symp. Freq. Control, Fort Monmouth, NJ, May 28-30, 1975, pp. 404-411.

D.W. Allan, H. Hellwig, and D.J. Glaze, "An Accuracy Algorithm for an Atomic Time Scale," Metrologia, vol. 11, pp. 133-138, 1975.

D.W. Allan, J.E. Gray, and H.E. Machlan, "The National Bureau of Standards Atomic Time Scale: Generation, Stability, Accuracy and Accessibility," NBS MN 140, Time and Frequency: Theory and Fundamentals, pp. 205-231, 1974.

B.E. Blair, ed., "Time and Frequency: Theory and Fundamentals," NBS MN 140, 1974.

J.A. Barnes and G.M.R. Winkler, "The Standards of Time and Frequency in the U.S.A.," NBS TN 649, 1974.

W. Ganter, "Modeling of Atomic Clock Performance and Detection of Abnormal Clock Behavior," NBS TN 636, 1973.

D.W. Allan, D.J. Glaze, H.E. Machlan, A.E. Wainwright, H. Hellwig, J.A. Barnes, and J.E. Gray, "Performance, Modeling, and Simulation of Some Cesium Beam Clocks," Proc. 27th Ann. Symp. Freq. Control, Fort Monmouth, NJ, June 12-14, 1973, pp. 334-346.

K. Yoshimura, "The Generation of an Accurate and Uniform Time Scale With Calibrations and Prediction," NBS TN 626, 1972.

D.W. Allan, J.E. Gray, and H.E. Machlan, "The National Bureau of Standards Atomic Time Scales: Generation, Dissemination, Stability, and Accuracy," IEEE Trans. Instrum. Meas., vol. 21, pp. 388-391, 1972.

J.L. Jespersen and L. Fey, "Time-Telling Techniques," IEEE Spectrum, vol. 9, pp. 51-58, 1972.

J.A. Barnes, "The Basic Concepts and Management within the U.S.A. of Precise Time and Frequency," NBS Report 10 726, 1972.

J.A. Barnes, "A Non-Mathematical Discussion of Some Basic Concepts of Precise Time Measurement," in On Frequency (Tracor Publishing, Inc.), vol. II, pp. 1-5, 1971.

D.W. Allan and J.E. Gray, "Comments on the Oct. 1970 Metrologia Paper "The U.S. Naval Observatory Clock Time Reference and the Performance of a Sample of Atomic Clocks,"" Int. J. Sci. Metrology, vol. 7, pp. 79-82, 1971.

D.W. Allan, "Statistical Modeling and Filtering For Optimum Atomic Time Scale Generation," Proc. Freq. Stand. and Metrology Sem., Quebec, Canada, 1971, pp. 388-410.

D.W. Allan, L. Fey, H.E. Machlan, and J.A. Barnes, "An Ultra-Precise Time Synchronization System Designed by Computer Simulation," Frequency, pp. 1-5, 1968.

J.A. Barnes and D.W. Allan, "An Approach to the Prediction of Coordinated Universal Time," Frequency, vol. 5, pp. 3-8, 1967.

G.E. Hudson, "Some Characteristics of Commonly Used Time Scales," Proc. IEEE, vol. 55, 1967, pp. 815-821.

J.A. Barnes, "The Development of an International Atomic Time Scale," Proc. IEEE, vol. 55, 1967, pp. 822-826.

L. Fey, J.A. Barnes, and D.W. Allan, "An Analysis of a Low Information Rate Time Control Unit," Proc. 20th Ann. Symp. Freq. Control, Monmouth, NJ, Apr. 19-21, 1966, pp. 629-635.

J.A. Barnes, D.H. Andrews, and D.W. Allan, "The NBS-A Time Scale—Its Generation and Dissemination," IEEE Trans. Instrum. Meas., vol. 14, pp. 228-232, 1965.

J. Newman, L. Fey, and W.R. Atkinson, "A Comparison of Two Independent Atomic Time Scales," Proc. IEEE, vol. 51, 1963.

TUTORIALS

D.J. Wineland, "Trapped Atoms and Laser Cooling," Elementary Modern Physics, Paul Tipler, ed. (Worth Publ.), pp. 156-162, 1992.

J.L. Jespersen, "Introduction to the Time Domain Characterization of Frequency Standards," Tutorials from 23rd Ann. PTTI Mtg., Pasadena, CA, Dec. 3-5, pp. 83-102, 1991.

D.W. Allan, M.A. Weiss, and J.L. Jespersen, "A Frequency-Domain View of Time-Domain Characterization of Clocks and Time and Frequency Distribution Systems," Proc. 45th Ann. Symp. Freq. Control, Los Angeles, CA, May 29-31, 1991, pp. 667-678.

G. Kamas and M.A. Lombardi, "Time and Frequency Users Manual," NBS SP 559 (Revised), 1990.

D.B. Sullivan, D.W. Allan, D.A. Howe, and F.L. Walls, "Characterization of Clocks and Oscillators," NIST Tech. Note 1337, pp. 1-342, 1990.

D.W. Allan, "Time and Frequency (Time-Domain) Characterization, Estimation, and Prediction of Precision Clocks and Oscillators," IEEE Trans. Ultrason., Ferroelec., Freq. Cont., vol. 34, pp. 647-654, 1987.

D.W. Allan, "Characterization, Optimum Estimation, and Time Prediction for Precision Clocks," Proc. 17th Ann. PTTI Mtg., Ft. Monmouth, NJ, May 27-29, 1985, pp. 45-67.

D.W. Allan, "Clock Characterization Tutorial," Proc. 15th Ann. PTTI Mtg., Washington, DC, Dec. 6-8, 1983, pp. 259-475.

D.A. Howe, D.W. Allan, and J.A. Barnes, "Properties of Signal Sources and Measurement Methods," Proc. 35th Ann. Symp. Freq. Control, Philadelphia, PA, May 27-29, 1981, pp. A1-A47.

J. Jespersen and J. Fitz-Randolph, "From Sundials to Atomic Clocks," NBS MN 155, 1977.

H. Hellwig, "Frequency Standards and Clocks: A Tutorial Introduction," NBS TN 616 (2nd revised edition), 1977.

D.A. Howe, "Frequency Domain Stability Measurements: A Tutorial Introduction," NBS TN 679, 1976.

D.W. Allan, "The Measurement of Frequency and Frequency Stability of Precision Oscillators," NBS TN 669, 1975.