

## Announcement

### Proceedings of the URSI Symposium on Electromagnetic Theory and Antennas

During the week of June 25-30, 1962, a very successful symposium was held in Copenhagen, Denmark, under the auspices of the International Scientific Radio Union. Professors J. Rybner and H. L. Knudsen, of the Technical University of Denmark, were president and secretary of the symposium, respectively, and Professor J. R. Wait was chairman of the technical program. Generous support was provided by URSI and a number of Danish firms and institutions. This was the fourth of a series of electromagnetic symposia. The previous three were at McGill University in 1953, University of Michigan in 1955, and at the University of Toronto in 1959. The proceedings of the latter two symposia have appeared as special issues of the PGAP Transactions.

Many of the papers presented at Copenhagen are to appear in a forthcoming book entitled "Electromagnetic Theory and Antennas." This is to be a volume of Pergamon Press' new series on Electromagnetic Waves. This collection of papers was edited by a committee under the chairmanship of Professor E. C. Jordan.

The titles of the papers appearing in the volume are indicated below. When the material is only in (1000 word) summary form, such is indicated after the title.

#### A. Scattering and Diffraction Theory

1. A Survey of Short Wavelength Diffraction Theory  
J. B. Keller
2. On the Transverse Diffusion of Short Waves Diffracted by a Convex Cylinder-----V. Fock and L. Wainstein
3. Scalar Diffraction by a Thin, Oblate Spheroid  
R. F. Goodrich, N. D. Kazarinoff and V. H. Weston
4. Diffraction of a Scalar Wave by a Plane Circular Disc (summary)-----E. B. Hansen
5. Diffraction of Radio Waves by Several Smooth Mountains-----K. Furutsu
6. The Scattering of a Plane Electromagnetic Wave by a Finite Cone  
C. C. Rogers, J. K. Schindler and F. V. Schultz
7. Scattering by Nonspherical Particles Whose Size is of the Order of the Wave Length-----J. Mayo Greenberg
8. Scattering and Diffraction of Transient Plane Electromagnetic Waves (summary)-----E. M. Kennenagh
9. Plane Wave Diffraction by a Strip-----Ralph E. Kleinman
10. Scattering by a Wide Grating (summary)---R. F. Millar
11. A Boundary Wave Theory of Diffraction at an Aperture (summary)---E. Wolf, E. Marchand, and K. Miyamoto
12. Diffraction Wave in Case of an Arbitrary Incident Field in the Electromagnetic Kirchhoff Theory (summary)-----A. Rubinowicz
13. An Asymptotic Expansion of Electric Vector Fields with Complex Phase Function (summary)----S. Pogorzelski
14. Forward and Backward Scattering from a Penetrable Sphere at Short Wavelengths (summary)---S. I. Rubinow
15. The Transition from Far-Field to Near-Field Geometrical Optics: An Estimate of the Boundary Layer Thickness in Diffraction Problems (summary)---W. P. Brown, Jr.
16. The Radar Cross Section of a Conducting Cylinder with Dielectric Sleeve at the Optical Limit (summary)  
R. D. Kodis
17. Scattering from a Cylinder Coated with a Dielectric Material-----C. W. Helstrom
18. Scattering by a Finite Cylinder-----R. B. Kiebertz
19. The Diffraction Fields of a Non-Uniform Circular Aperture (summary)-----S. Cornbleet
20. Diffraction on a Broad Aperture in Broad Waveguide  
B. Z. Katzenellenbaum

21. Some Recent Developments in Scattering and Diffraction Theory (summary)-----A. E. Heins
22. Reflection at the Junction of an Inhomogeneously Loaded Waveguide—A Quasi-Static Approach-----L. Lewin
23. Systematic Improvement of Quasistatic Calculations (summary)-----S. N. Karp
24. Reflection at Incidence of an  $H_{mn}$ -Wave at Junction of Circular Waveguide and Conical Horn-----G. Piefke
25. Scattering Diagrams in Electromagnetic Theory  
G. A. Deschamps
26. Generalized Variational Principles for Forced Electromagnetic Vibrations; Application to the Theory of Waveguide Junctions-----D. M. Kerns
27. The Sommerfeld-Runge Law and Geometric Optics in Four Dimensions (summary)-----H. Pöeverlein
28. Angular Momentum of Electromagnetic Radiation (summary)-----G. Toraldo di Francia

#### B. Anisotropic and Stratified Media

1. Wave Propagation in Anisotropic Plasmas (summary)-----W. P. Allis
2. The Relation Between Hydromagnetic Waves and the Magneto-Ionic Theory-----C. O. Hines
3. Waves in Plasma (summary)-----B. Agdur
4. Discontinuous Flow of Plasma (summary)---K. Bochenek
5. Unstable Transverse Modes of Drifting Charged Particles in a Plasma in a Magnetic Field-----F. Shimabukuro
6. Propagation des ondes dans un guide rempli de plasma en presence d'un champ magnétique  
M. Camus et J. le Mezec
7. Self-Interaction of Longitudinal Plasma Oscillations with Generation of Electromagnetic Radiation. Application to the Narrow-Band Radio Bursts of the Sun (summary)  
R. Larenz
8. Wave Propagation in Anisotropic Media (summary)  
P. Mattila
9. Vector Integral Equations for the Electric Field in an Inhomogeneous Magneto-Ionic Medium (summary)  
W. C. Hoffman
10. Harmonic Excitation in and Reradiation from Non-Uniform Ionized Regions (summary)-----L. Wetzel

11. Impedances and Reflection Coefficients for Anisotropic Media----- I. Kay
12. Theory of Radiation from Sources in Anisotropic Media:  
Part I: General Sources in Stratified Media  
Part II: Point Source in Infinite, Homogeneous Medium  
E. Arbel and L. B. Felson
13. On the Theory of Radiation from a Source in a Magneto-  
Ionic Medium----- P. C. Clemmow
14. Electromagnetic Radiation from Sources Embedded in an  
Infinite Anisotropic Medium and the Significance of the  
Polynting Vector----- H. Motz and H. Kogelnik
15. Field Solution for a Dipole in an Anisotropic Medium  
R. Mitra and G. A. Deschamps
16. The Impedance of an Aerial Immersed in an Anisotropic  
Medium----- K. G. Budden
17. Lateral Waves on Air-Magnetoplasma Interfaces  
G. Tyras, A. Ishimaru and H. M. Swarm
18. Antenna Characteristics in the Presence of a Plasma  
Sheath----- G. G. Cloutier and M. P. Baehynshi
19. Coupling of Electromagnetic and Magnetostatic Modes  
Axially Magnetized Ferrite Waveguides---- B. A. Auld
20. Gyromagnetic Resonances of Thick Ferrite Slabs Excited  
in a Transverse Electric Mode (summary)-- H. Seidel
21. On the Possibility of Intrinsic Loss Occurring at the Edges  
of Ferrites (summary)----- R. A. Hurd
22. A Modal Solution for a Rectangular Guide Loaded with  
Longitudinally Magnetized Ferrite  
G. Barzilai and G. Gerosa
23. Unidirectional Waves in Anisotropic Media\_ A. Ishimaru
24. Backward Waves in Ferrites---- G. H. B. Thompson
25. On the Distortion of a Static, Homogeneous Field in an  
Anisotropic Medium Caused by an Ellipsoidal Cavity  
Filled with Another Anisotropic Medium (summary)  
V. Frank
26. A Note on the Oblique Incidence of Electromagnetic  
Waves upon Absorbing Slab----- K. Morita
27. Propagation of Electromagnetic Waves in an Anisotropic  
Stratified Medium (summary).  
R. W. Hougardy and D. S. Saxon
28. Diffraction at High Frequencies in a Stratified Medium  
(summary)----- D. S. Jones
29. Synthetization of Nonuniform Lines or Layers Starting  
from Given Reflection Spectra  
G. Latmiral, R. Vinciguerra, and G. Franceschetti

#### C. Random Media and Partial Coherence

1. Delineations and Methodology in the Subject of Scatter-  
ing by a Statistically Inhomogeneous Medium (summary)  
S. Silver
2. Scattering by a Perturbed Continuum----- H. Bremmer
3. Scattering by Random Media----- V. Twersky
4. The Depolarization of Electromagnetic Waves Scattered  
from Surfaces----- P. Beckmann
5. Propagation guidée le long d'un feuillet atmosphérique  
ou (plus particulièrement) exosphérique (summary)  
J. Voge
6. On the Multiple Scattering of Electromagnetic Waves by  
the Troposphere in the Optical Spectrum  
D. S. Bugnolo
7. Correlation Matrix for Radio Waves in a Randomly  
Perturbed Medium (summary)----- E. C. Barrows
8. The Description of a Random Propagation Circuit  
Through the Coherence Between Adjacent Frequencies  
T. Hagfors
9. Réflexion spéculaire et réflexion diffuse en milieu  
feuilleté (summary)----- F. du Castel
10. Etudes des réflexionspar la mer au moyen d'un goniometre  
L. Boithias, A. Spizzichino et C. Taieb
11. Microwave Properties of the Atmosphere and Cloud Layer  
of Venus (summary)----- C. Sagan
12. Introduction to Partially Coherent Electromagnetic Fields  
F. J. Zucker
13. Some Fundamental Questions of Coherence Theory (sum-  
mary)----- G. B. Parrent, Jr.
14. Partially Coherent Diffraction by a Circular Aperture  
R. A. Shore

15. Polarization Properties of the Electromagnetic Field  
Diffracted from an Aperture (summary)  
B. Karczewski and E. Wolf
16. Phase Determination of Coherence Functions by the In-  
tensity Interferometer----- H. Gamo
17. The Determination of Spectral Density Distributions  
from Measurements of Radiation Fluctuations  
L. Mandel

#### D. Surface Waves, Leaky Waves, and Mode Propagation

1. The Role of Leaky Waves in Electromagnetic Phenomena  
A. A. Oliner
2. Solution of the Exact Excitation Problem on Tubular  
Waveguides----- A. E. Karbowskiak
3. Modulated Surface Wave Antennas----- O. Billstrom
4. Wood's Anomalies and Leaky Waves (summary)  
A. Hessel and A. A. Oliner
5. A Surface Wave Antenna as a Boundary Value Problem  
(summary)----- J. Kane
6. The Radiation Emitted by a Charged Particle in Uniform  
Straight Motion through a Particular Stratified Medium  
(summary)----- R. Pratesi, L. Ronchi,  
A. M. Scheggi, and G. Toraldo di Francia
7. Optical Dielectric Waveguides (summary)----- E. Snitzer
8. Optical Relations for Coherent Wave Beams  
G. Goubau
9. Waveguides with Anisotropic Impedance Walls  
H. G. Unger
10. Hybrid Modes of a Circular Cylindrical Cavity Containing  
a Coaxial Sheet with Anisotropic Properties--- J. Falnes
11. Mode Classification for Various Waveguiding Structures  
of Elliptical Cross Section (summary)  
J. C. Wiltse and M. J. King
12. Backward-Wave Propagation in Non-Periodic Waveguide  
Structures---- P. J. B. Clarricoats and D. E. Chambers
13. Propagation of Electromagnetic Waves Along Unidirection-  
ally Conducting Screens  
F. C. Karal, Jr. and S. N. Karp
14. A Soluble Problem in Duct Propagation  
E. T. Kornhauser and G. S. Heller
15. The Poynting's Vector and the Velocity of the Energy  
Propagation (summary)----- V. Koželj
16. On the Definition of Some Electromagnetic Quantities  
(summary)----- G. B. Rego

#### E. Antenna Theory and Radiating Elements

1. On the Theory of Frequency Independent Antennas  
V. H. Rumsey
2. Log Periodic Antennas and Circuits---- R. H. DuHamel
3. Fresnel Region Power Transfer (summary)----- E. Jacobs
4. Reactive Energy in Aperture Fields and Aperture Q  
(summary)----- R. E. Collin and S. Rothschild
5. On the Theory of an Antenna Over an Inhomogeneous  
Ground Plane----- J. R. Wait
6. The Radiation Field from a Vertical Dipole on an  
Inhomogeneous Ground----- J. B. Andersen
7. A Survey on the Use of Conformal Mapping for Solving  
Wave-Field Problems----- H. H. Meinke
8. On the Unity Gain Antenna (summary)--- W. K. Saunders
9. Exact Solution of the Antenna Equation (summary)  
E. Hallen
10. Interpretation of Antenna Impedance (summary)  
R. H. Duncan
11. A Class of a New Type of Broad-Band Antennas-- E. Spitz
12. Le Radiateur Électromagnétique Sphérique (summary)  
L. Robin et P. Poincelet
13. Application of Selective Mode Coupling in the Solution  
to Biconical Antennas----- M. A. Plonus
14. A Low Noise Feed System for Large Parabolic Reflector  
Antennas (summary)----- H. Jasik and A. D. Bresler
15. Radiation and Reception with Buried and Submerged  
Antennas (summary)----- R. C. Hansen
16. An Experimental Study of the Insulated Dipole Antenna  
Immersed in a Conducting Medium (summary)  
K. Iizuka

17. An Analysis of a Natural VLF Slot Antenna---H. Staras
18. A One-Eighth-Wave Broadband Folded Unipole Antenna (summary)  
T. Kitsuregawa, Y. Takeichi, and M. Mizusawa
19. A Plasma Antenna and Wave Filter  
I. Kaufman and W. H. Steier

#### F. Antenna Arrays and Data Processing

1. A Variational Method of Synthesizing Antenna Power Patterns (summary) ----E. K. Proctor and C. M. Ablow
2. On Large Non-Uniformly Spaced Arrays (summary)  
J. L. Yen and J. L. Chow
3. The Selection and Evaluation of Antennas for the Survey of Incoherent Source Distributions-----A. C. Schell

4. Spatial Frequency Characteristics of Finite Aperture Antennas.....A. Ksienski
5. Pattern Limitations in Multiple Beam Antennas (summary)-----W. D. White
6. Multiplicative Receiving Arrays.....V. G. Welsby
7. Transfer Functions and the Resolving Power of Radio Telescopes (summary) -----R. M. Chisholm
8. Angular Location, Monopulse and Resolution (summary)  
W. Hausz
9. Current Development in an Electronically Scanned Antenna.....H. V. Cottony
10. Active Electronic Antennas (summary).....R. N. Ghose
11. Near-Field Characteristics of a Linear Array (summary)  
L. J. Ricardi
12. Linear Arrays: Currents, Impedances and Fields, II  
R. King and S. S. Sandler

## SYMPOSIUM ON THE IONOSPHERIC PROPAGATION OF VERY LOW FREQUENCY ELECTROMAGNETIC WAVES

A Symposium on the Ionospheric Propagation of VLF electromagnetic waves will be held at the Central Radio Propagation Laboratory, National Bureau of Standards, Boulder, Colorado, U.S.A., on August 12-14, 1963, both days inclusive. This will be a continuation of an earlier symposium on the Propagation of VLF Radio Waves held in 1957 at Boulder, Colorado. The members of the Technical Program Committee are J. K. Hargreaves, A. G. Jean, J. R. Wait, J. S. Belrose, W. T. Blackband, R. A. Helliwell, Mrs. D. Belsher (Secretary) and D. D. Crombie (Chairman).

The Symposium will be devoted to subjects of current importance in terrestrial VLF propagation with emphasis being placed on the effects of the ionosphere. Subjects to be covered will include mode theory, theory of formation, and physical characteristics of the lower ionosphere, observations of VLF propagation under normal and disturbed conditions. Some leading workers in the above fields are being invited to give the majority of the papers.

Some provision will be made for short contributed papers. It is hoped that the papers will be published in Section D (Radio Propagation) of the Journal of Research of NBS.

Further information about the Symposium is available from Mrs. D. Belsher, Secretary VLF Symposium, National Bureau of Standards, Boulder, Colorado, U.S.A.