THE 1989
URSI INTERNATIONAL SYMPOSIUM
ON
ELECTROMAGNETIC THEORY

The Royal Institute of Technology
Stockholm, Sweden, August 14-17, 1989

Organized by
Commission B "Fields and Waves", of the
International Union of Radio Science (URSI)
in co-operation with
The Swedish National Committee of URSI (SNRV)
The Royal Institute of Technology (KTH)
### Scientific programme

**Monday, August 14 a.m.**

#### M 1a  General scattering and diffraction I
Chairman: J. VAN BLADEL, University of Ghent, BELGIUM
Lecture hall: F1

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#### M 1b  Random media I
Chairman: A. ISHIMARU, University of Washington, Seattle, USA
Lecture hall: D1

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M Ic  Finite differences and finite elements
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Lecture hall: F3

09.35  JECKO, B, REINEIX, A (I.R.C.O.M., Limoges, FRANCE), Study of microstrip antennas using the finite difference time domain method

10.00  YOSHIDA N, FUKAI, I (Hokkaido University, JAPAN), Transient analysis of vector potential in three-dimensional space by spatial network

10.25  SVEDIN, J (Swedish Defence Research Establishment, Linköping, SWEDEN), A fast converging finite-element procedure without spurious modes for waveguide propagation analysis

10.50  COFFEE BREAK

11.15  BAUM, E, BUCHHOLZ, F.G (Universität-GH-Paderborn, FRG), Accurate cut-off frequency calculation with low order finite elements

11.40  SALAZAR PALMA, M, HERNANDEZ GIL, J.F (Universidad Politecnica de Madrid, SPAIN), Finite element analysis of general inhomogeneous, anisotropic and multiconductor transmission-line structures, employing an efficient self adaptive mesh scheme

12.05  MUR, G (Delft University of Technology, THE NETHERLANDS), The finite-element modelling of three-dimensional time-harmonic electromagnetic fields in inhomogeneous media

12.30  KUZUOGLU, M (Middle East Technical University, Ankara, TURKEY), Analysis of transmission of electromagnetic waves through apertures by a combination of the finite element and boundary element methods

12.55  CLOSE OF SESSION AND LUNCH

M Id  Microstrip patch antennas
Chairman: A. A. OLINER, Polytechnic University, Brooklyn, USA
Lecture hall: F2

09.35  VANDENBOSCH, G, VAN DE CAPELLE, A (K.U.L Leuwen, BELGIUM), A highly accurate analysis of the dual patch microstrip antenna and the microstrip backfire antenna

10.00  BARLATEY, L, et al (Ecole Polytechnique Fédérale de Lausanne, SWITZERLAND), Conducting patches in layered media: Surface waves and field components

10.25  BEM, D.J, KATULSKI, R.J (Technical University of Wroclaw, POLAND), Comparative numerical study of several techniques of microstrip antenna modelling

10.50  COFFEE BREAK

11.15  LOUZIR, A et al (ENST de Bretagne, FRANCE), Study of discontinuities in open waveguides—application to improvement of radiation source models

11.40  MATZNER, H et al (Elta Electronics Industries Ltd, Ashod, ISRAEL), Design curves for rectangular microstrip patch based on an improved moment-method solution

12.05  MITKEES, A. A et al (Nasr City, EGYPT), Surface wave modes associated with microstrip wraparound antenna structure

12.30  ILYINSKI, A. S, IVAKHNENKO, V I (Moscow State University, USSR) Scattering by patch in multilayered media

12.55  CLOSE OF SESSION AND LUNCH
Monday, August 14 p.m.

M IIa  Half-plane scattering
Chairman: P.Ya. UFIMTSEV, USSR Academy of Sciences, Moscow, USSR
Lecture hall: F1

14.00  SENIOR, T.B.A (University of Michigan, USA), Diffraction by a generalized impedance half-plane

14.25  PEARSON, L.W, WHITAKER, R.A (McDonnell Douglas Research Laboratories, St Louis, USA), A transverse aperture-integral-equation solution for edge diffraction by multiple layers of homogeneous material

14.50  BRAVER, I.M et al (Grodno State University, USSR), Electromagnetic field near the common edge of a perfectly conductive wedge and a resistive half-plane

15.15  COFFEE BREAK

15.40  PRZEZDZIECKI, S (Polish Academy of Sciences, Warsaw, POLAND), Diffraction by a transmissive half-plane

16.05  CIARKOWSKI, A (Polish Academy of Sciences, Warsaw, POLAND), Quasilinear asymptotic solution in the optically denser medium for the problem of electromagnetic plane wave diffraction at the interface of dissimilar media

16.30  BANKOV, S.E et al (The Moscow Power Engineering Inst, USSR), Dielectric slab surface waves diffraction in half-infinite metallic structures

16.55  CLOSE OF SESSION

M IIb  General waveguides
Chairman: D. CENSOR, Ben Gurion University, Beer-Sheva, ISRAEL
Lecture hall: D1

14.00  SWAMINATHAN, M et al (Syracuse University, USA), A fast and accurate method for evaluating the cut-off wavenumbers of TE and TM modes in waveguides of arbitrary cross section using surface formulation

14.25  NAVA, E, REBOLLAR, J.M (ETS1 Telecomunicacion, Madrid, SPAIN), A comparative study of Schelkunoff methods for the analysis of homogeneous waveguides with arbitrary cross-section

14.50  SVESHNIKOV, A.G, MODENOV, V.P (Moscow State University, USSR), Projection methods of waveguides calculations

15.15  COFFEE BREAK

15.40  WILSON, P.F (ABB Corporate Research, Baden-Daettwil, SWITZERLAND) Higher-order mode field distribution in asymmetric TEM cells

16.05  OVERFELT, P.L (Naval Weapons Center, China Lake, USA), Electromagnetic field solutions based on sums of rectangular harmonics and symmetry for certain parallelogram and trapezoidal waveguides

16.30  OKONIEWSKI, M, MAZUR, J (The Technical University of Gdansk, POLAND), Waveguides with complex cross-sectional geometry containing longitudinal dielectric rods

16.55  CLOSE OF SESSION

M IIc  Numerical results
Chairman: D.G. DUDLEY, University of Arizona, Tucson, USA
Lecture hall: F3

14.00  MIYAZAKI, Y, MANABE, K (Toyohashi University of Technology, JAPAN), Scattered near field and induced current of a beam wave by pits on optical disks using boundary element analysis

14.25  GALAN-MALAGA, H et al (Lab des Signaux & Systemes, CNRS-ESF, Gif-sur-Yvette, FRANCE), Numerical analysis of the field radiated by a current loop in a borehole crossing a bed boundary

14.50  MARCHILDON, L et al (University of Quebec, CANADA), Computer simulation of the electromagnetic field in a resonant cavity in the neighborhood of an insertion hole

15.15  CLOSE OF SESSION AND COFFEE BREAK
**M IIIc  Inverse scattering I**  
Chairman: S. CAORSI, University of Genoa, ITALY  
Lecture hall: F3  

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**M IIId  Fields in biological media (Invited papers)**  
Convenor and chairman: J. BACH ANDERSEN, Aalborg University Centre, DENMARK  
Lecture hall: F2  

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**Tuesday, August 15 a.m.**

**Tue Ia  Inverse scattering II**  
Chairman: H. CHALOUPKA, Bergische Universität, Wuppertal, FRG  
Lecture hall: F1  

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<td>KARLSSON, A et al (Royal Institute of Technology, Stockholm, SWEDEN),</td>
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<td>11.00</td>
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Tue Ib  Ray methods
Chairman: E.V. JULL, University of British Columbia, Vancouver, CANADA
Lecture hall: F2

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08.55 FELSEN, L.B. et al (Polytechnic University, Farmingdale, USA), Ray formulation of waves guided by cylindrically stratified dielectrics 175
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Tue Ic  Non-linear phenomena
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**Tue Id**  
**Slot and aperture antennas**  
Chairman: P.J.B. CLARRICOATS, Queen Mary College, London, U.K.  
Lecture hall: F3

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RENGARAJAN, S.R (California State University, Northridge, USA), Resonant coupling slots for complex excitation of planar slot arrays  
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WANG, H (Shandong University, PEOPLE'S REP OF CHINA), A general formulation for waveguide coupling through an arbitrarily oriented slot  
09.20  
DEGAUQUE, P et al (University of Lille, FRANCE), Radiating waveguide for radiocommunication, speed measurement and location of guided vehicles  
09.45  
HANSEN, R.C (R.C Hansen Inc., Tarzana, USA), A simple near-field envelope formula for square aperture antennas

10.10  
SHUMLJANSKY, I.I (Hydrometeorological Institute, Odessa, USSR), The electromagnetic compatibility increase of systems using horn radiation with curve formers

10.35  
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11.00  
MITTRA, R et al (University of Illinois, USA), Interaction of antennas with radomes

11.25  
SHAPIRO, M.A, VLASOV, S.N (USSR Academy of Sciences, Gorky, USSR), Wave radiation from irregular waveguides and horns

11.50  
GIMENO, B et al (Universidad de Valencia, SPAIN), Broadband multistage polarized radome for a phased array antenna.

12.15  
VDOVICHEVA, N.K et al (USSR Academy of Sciences, Gorky, USSR), The variational approach to the problem of antenna synthesis in multimode waveguides

12.40  
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**Tuesday, August 15 p.m.**

**Tue IIa**  
**General scattering and diffraction II**  
Chairman: R.E. KLEINMAN, University of Delaware, Newark, USA  
Lecture hall: F1

14.00  
SHIRAI, H (Chun University, JAPAN), Electromagnetic plane wave scattering by a wide open-ended parallel-plate waveguide with a finite termination

14.25  
SHAO, H, ZHENG W (North China Inst of Electric Power, Beijing, PEOPLE'S REP OF CHINA), Resonance scattering of multiple dielectric objects with axisymmetric geometry

14.50  
COTTIS, P.C, KANELLOPOULOS, J.D (National Technical University of Athens, GREECE), Scattering of electromagnetic waves from infinite dielectric cylinders embedded in a lossy medium with a sinusoidal profile

15.15  
COFFEE BREAK

15.40  
PAPOUSEK, W (Technical University Graz, AUSTRIA), Far-field approximations of general sources in layered media

16.05  
DELECKI, Z.A (Canadian Institute of Industrial Technology, Winnipeg, CANADA), A generalization of the representation theorem for the wave equation

16.30  
ZHANG, Q, JULL, E.V (University of British Columbia, Vancouver, CANADA), Acoustic pulse diffraction by curved discontinuities on a plate

16.55  
BJÖRKBerg, J (Royal Institute of Technology, Stockholm, SWEDEN), Natural frequencies and eigencurrents of the elliptic disk

17.20  
POLISHCHUK, I.M (Electrotechnical Inst of Communications, Odessa, USSR), Integral representation of wave fields as superposition of only homogeneous plane waves and their use in the theory of radiation, reception and diffraction

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CLOSE OF SESSION
Tue IIb  Chiral media
Chairman: I.V. LINDELL, Helsinki University of Technology, FINLAND
Lecture hall: F3

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14.50  ENGHETA, N, PELET P (University of Pennsylvania, USA), Guided-wave structures filled with chiral materials 277
15.15  CLOSE OF SESSION AND COFFEE BREAK

Tue IIIb Anisotropic media
Chairman: V.V. VARADAN, Pennsylvania State University, USA
Lecture hall: F3

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16.05  PETIT, R et al (Faculté des Sciences, Marseille, FRANCE), On the electromagnetic theory of anisotropic gratings 283
16.30  AUDONE, B, USLENGHI, P.L (Aeritalia, Casselle Torinese, ITALY), Reflection and transmission for general multilayered anisotropic structures 286
16.55  CLOSE OF SESSION

Tue IIc  Dielectric waveguides
Chairman: J. Ch. BOLOMEY, E.S. d’Electricité, Gif-sur-Yvette, FRANCE
Lecture hall: D1

14.00  LEMINGER, O, ZESCH, G (Forschungsinstitut der DBP, Darmstadt, FRG), Adiabatic directional coupling between dielectric waveguides 289
14.25  MORITA, N, YAMASHITA, I (Osaka University, JAPAN), Transmission characteristics of modes in dielectric slab waveguides with a finite-length, uniformly bent section 291
14.50  MATSUMURA, K, TOMABECHI, Y (Utsunomiya University, JAPAN) Reflection and transmission characteristics of rectangular dielectric waveguide discontinuity 294
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15.40  CHANG, H-C, HUANG H.S (National Taiwan University, TAIWAN, ROC), Determination of guided vector modes on an equilateral three-core optical fiber based on vector coupled-mode calculation 297
16.05  WAKABAYASHI, T, MIHARA, Y (Tokai University, JAPAN), Analysis of polarization maintaining fibers with a flat elliptical core 300
16.30  HASHIMOTO, M (Osaka Electro-Communication University, JAPAN), Geometrical description for wave-normal rays in an optical waveguide—geometrical optics for stationary waves 303
16.55  CLOSE OF SESSION
Tue IIId  Electromagnetic transient methods in applied geophysics (Invited papers)
Convenor and chairman: J.R. WAIT, University of Arizona, Tucson, USA
Lecture hall: F2

14.00  WAIT, J.R (University of Arizona, Tucson, USA), Transient electromagnetic waves in applied geophysics—an introductory survey

14.25  SMITH, R.S (Lamontagne Geophysics, Toronto, CANADA), The flow of electromagnetic currents in polarizable media: principles and effects

14.50  CHEW, W.C, et al (University of Illinois at Urbana-Champaign, USA), Computation of transient electromagnetic waves in inhomogeneous media

15.15  HABASHY, T.M (Schumberger-Doll Research, Ridgefield, USA) Simultaneous inversion of permittivity and conductivity profiles using transient data

15.40  CLOSE OF SESSION AND COFFEE BREAK

Tue IIId  Electrodynamics
Chairman: J.M. ARNOLD, University of Glasgow, U.K.
Lecture hall: F2

16.05  POPOVIC, B.D (University of Belgrade, YUGOSLAVIA), Field-theory analysis of electrical networks in real space

16.30  GOOSENS, K, VAN BIESEN, L (Vrije Universiteit Brussel, BELGIUM), Frequency dependent behaviour of macroscopic particles in an electromagnetic field

16.55  YAGHJIAN, A.D (Hanscom AFB, USA), A classical electro-gravitational model of a point charge with finite mass

17.20  ROZANSKI, L (Technical University Poznan, POLAND), An idea of the multiport representation of three dimensional electromagnetic fields

17.45  CLOSE OF SESSION

Wednesday, August 16 a.m.

W la  Integral equations and iterative techniques
Chairman: P.M. VAN DEN BERG, Delft University of Technology, The NETHERLANDS
Lecture hall: F1

08.30  KLEINMAN, R.E, VAN DEN BERG, P.M (University of Delaware, USA), Iterative methods for solving integral equations

08.55  OKADA, T, KAJFEZ, D (University of Mississippi, USA), FIT formulation for cylindrical cavities resulting in a symmetric matrix

09.20  KAJFEZ, D, WU, W.L (University of Mississippi, USA), Gradual mode matching

09.45  PETRE, P (Technical University of Budapest, HUNGARY), Application of the generalized biconjugate gradient-FFT method for analysing arrays of resistive patches standing in free space and in front of a ground plane covered by a dielectric layer.

10.10  COFFEE BREAK

10.35  COOK, G.G et al (University of Sheffield, UK), Efficient calculation of scattered fields from 3-d conductors by spectral incremental propagation (SIP)

11.00 UCHIDA, K et al (Fukuoka Institute of Technology, JAPAN), New type of spectral domain analysis of electromagnetic wave scattering by a conducting strip in case of oblique incidence and arbitrary polarization

11.25  CUEVAS, J.G (Univ Politecnica de Madrid, SPAIN), Analysis of active and passive periodic structures by the discrete convolution method and the dielectric slab Green function

11.50  KASTNER, R, HERSCOVICI, N (Tel-Aviv University, ISRAEL), A concise conjugate gradient computation of plate problems with many excitations

12.15  CLOSE OF SESSION AND LUNCH
### W Ib: Uniform asymptotics

**Chairman:** P. PATHAK, Ohio State University, Columbus, USA  
**Lecture hall:** F3

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<td>Interaction of relativistic electron beam with electromagnetic field inside a two-dimensional cusp-catacaustic region</td>
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<td>ARNOLD, J.M (University of Glasgow, UK)</td>
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<td>CORNBLEET, S (University of Surrey, UK)</td>
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<td>Uniform asymptotic expansion for the Green's function at high frequencies for a round cylinder and its justification</td>
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### W Ic: Anisotropic and multilayered waveguides

**Chairman:** T. TAMIR, Polytechnic University, Brooklyn, USA  
**Lecture hall:** D1

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Wire and dipole antennas

Chairman: A.D. OLVER, Queen Mary College, London, U.K.
Lecture hall: F2

08.30 BUTLER, C.M, KAIRES, R.G (Clemson University, USA), Analysis of curved-wire antennas by means of the modified diakoptic theory

08.55 THIELE, G.A (University of Dayton, USA), Antenna mode and residual mode scattering by a dipole antenna

09.20 COORAY, M.F.R, CIRIC, I.R (University of Manitoba, CANADA), Interaction between two prolate spheroidal antennas in arbitrary configuration

09.45 KARWOWSKI, A (Silesian Technical University, POLAND), Analysis of arbitrary wire antenna above a lossy halfspace. High-contrast approximation

10.10 COFFEE BREAK

10.35 LEDINEGG, E, SCHÜRER, F (Technische Universität Graz, AUSTRIA), Current distribution of a system of helicoidally arranged cylindrical antennas

11.00 JAMES, G.I., POULTON, G.T (CSIRO Division of Radiophysics, Epping, AUSTRALIA), Effect of ground screens on HF antennas

11.25 NAGY, L (Technical University of Budapest, HUNGARY), Input impedance and radiation pattern of a top-loaded monopole antenna broad-banded with lumped-nets having a radial-wire ground system placed on an imperfectly conducting halfspace.

11.50 CLOSE OF SESSION AND LUNCH

Wednesday, August 16 p.m.

General scattering and diffraction III

Chairman: C.M. BUTLER, Clemson University, South Carolina, USA
Lecture hall: F1

14.00 HARRINGTON, R.F, GERALD, J.A (Syracuse University, USA), Electromagnetic scattering from a body containing apertures terminated by a microwave network

14.25 KABALAN, K et al (American University of Beirut, New York, USA), Complete study of electromagnetic coupling between two regions through narrow slot

14.50 XI, J.D (Northwestern Polytechnical University, Xian Shannxi, PEOPLES REP OF CHINA), Scattering from a curved circular tube

15.15 COFFEE BREAK

15.40 MUINONEN, K (University of Helsinki, FINLAND), Electromagnetic scattering by two interacting dipoles

16.05 VIITANEN, A.J (Helsinki University of Technology, FINLAND), The field of a vertical electric dipole moving slowly over a dielectric half-space formulated by the exact image theory

16.30 VOLAKIS, J.L (The University of Michigan, USA), Numerical implementation of generalized impedance boundary conditions

16.55 CLOSE OF SESSION
W IIb  Random media II
Chairman: E. BAHAR, University of Nebraska, Lincoln, USA
Lecture hall: D1
14.00  DE WOLF, D.A et al (Delft University of Technology, THE NETHERLANDS)
  Effective permittivity of and scattering from wet snow and ice droplets at radar
  wavelengths
14.25  TATEIBA, M (Kyushu University, JAPAN), The Lorentz reciprocity in random
  media—the derivation from Maxwell’s equations
14.50  FREULICHER, V.D, TARASOV, Y.V (Ukr SSR Academy of Sciences, Kharkov,
  USSR), Field from a point source in a randomly stratified medium
15.15  CLOSE OF SESSION AND COFFEE BREAK

W IIc  Discontinuities in waveguides
Chairman: R. MITTRA, University of Illinois, USA
Lecture hall: F3
14.00  PASCHER, W (Fern Universität, Hagen, FRG), Full wave analysis of discontinui-
  ties in planar waveguides by the method of lines
14.25  DJORDJEVIC, A et al (University of Belgrade, YUGOSLAVIA), Evaluation of
  excess inductance of microstrip discontinuities
14.50  LANDRAC, G, GELIN, P (E.N.S.T. de Bretagne, FRANCE), A study of wire-grid
  filters in circular waveguides at millimeter wavelengths
15.15  COFFEE BREAK
15.40  RODRIGUEZ, J et al (University of Oviedo, SPAIN), Analysis of multiple dielec-
  tric discontinuities in rectangular waveguide: application to transitions and
  posts
16.05  TAO, J.W, BAUDRAND, H (Ecole Nationale Supérieure EESIT, Toulouse,
  FRANCE), New design procedure for evanescent-mode ridged waveguide filters
16.30  GALCHENKO, N.A, GALCHENKO, G (Rostov State University, USSR), Distribu-
  tive solution to electromagnetic wave diffraction problems in the theory of
  waveguides
16.55  CLOSE OF SESSION

W IIId  Microstrip arrays
Chairman: D.J. BEM, Technical University of Wroclaw, POLAND
Lecture hall: F2
14.00  HANSEN, V (Ruhr-Universität Bochum, FRG), Radiation of finite and infinite
  arrays in multilayered media excited by feed lines or by a plane wave
14.25  ABDALLAH, E.A.F et al (National Research Centre, Cairo, EGYPT), Design of the
  zigzag type travelling wave microstrip antenna array
14.50  HERD, J.S (Rome Air Development Center, USA), Full wave analysis of infinite
  arrays of proximity coupled microstrip antennas
15.15  COFFEE BREAK
15.40  AL-SHAMARI, M.K.K (Technical University of Wroclaw, POLAND), Printed flat
  plate antenna array for DBS application
16.05  DRAGOMAN, M, CATOICI, M (R&D Center for Electron. Devices/Microw., Bucha-
  rest, ROMANIA), Microstrip—prony array
16.30  CLOSE OF SESSION
Thursday, August 17 a.m.

Thu la  Boundary value problems with transient excitation
Chairman: L.B. FELSEN, Polytechnic University, Farmingdale, USA
Lecture hall: F2

08.30 NIKOSKINEN, K.I. LINDELL, I.V (Helsinki University of Technology, FINLAND), Time-domain field solution of Sommerfeld problem based on the exact image theory

08.55 SUZUKI, T et al (Tobuk University, JAPAN), Transient dipole fields scattered by a perfectly conducting cylinder

09.20 TAYLOR, D.J, ÜBERALL H (Catholic University, Washington DC, USA), Complex eigenfrequencies of dispersive, anisotropic dielectric spheres and coated conducting spheres

09.45 STRIFORS, H et al (Naval Surface Warfare Center, Silver Spring, USA), Scattering of arbitrary electromagnetic pulses by dielectric spherical targets

10.10 COFFEE BREAK

10.35 WALKOWIAK, M (Instytut Techniki WSP, Zielona Gora, POLAND), Time-frequency analysis of transient electromagnetic processes

11.00 HEYMAN, E et al (Tel Aviv University, ISRAEL), Scalar and electromagnetic pulsed beams: properties and applications

11.25 OUGHSTUN, K.E et al (University of Vermont, USA), Asymptotic description of ultrashort electromagnetic pulse propagation in a linear, causally dispersive medium

11.50 EHRICH, M (Universität der Bundeswehr, Hamburg, FRG), Shielding of non-periodical signals by a conducting screen

12.15 CLOSE OF SESSION AND LUNCH

Thu lb  Rough surface scattering
Chairman: R.H. LANG, George Washington University, USA
Lecture hall: D1

08.30 BAHAR, E (University of Nebraska-Lincoln, USA), Physical models of nonspecular scattering in irregular stratified media

08.55 KERROUM, K et al (Université Blaise Pascal, Aubière, FRANCE), Propagation and diffraction of an electromagnetic wave over a rough surface

09.20 ISHIMARI, A (University of Washington, Seattle, USA), The diagram and smoothing methods for rough surface scattering

09.45 YORDANOV, O.I STOYANOV, O (Bulgarian Academy of Sciences, Sofia, BULGARIA), Detailed application of the Kirchhoff approximation to scattering by fractal-like rough surfaces

10.10 COFFEE BREAK

10.35 JIN, Y-Q (Fudan University, Shanghai, PEOPLE'S REP OF CHINA), On scattering from correlated points of a randomly rough surface in the Kirchhoff approximation

11.00 INGERS, J, BREIDNE M (Royal Institute of Technology, Stockholm, SWEDEN), Surface roughness scattering theories—a numerical comparison

11.25 KOTSUKA, Y (Tokai University, JAPAN), Analysis of mean scattered power on gaussian-distributed-type rough surface

11.50 IVANOVA, K et al (Bulgarian Academy of Sciences, Sofia, BULGARIA), Numerical study of scattering by wide spectrum rough surfaces

12.15 CLOSE OF SESSION AND LUNCH
Thu Ic  Microstrip and planar waveguides

Chairman: F.E. GARDIOL, Ecole Polytechnique Fédérale de Lausanne, SWITZERLAND
Lecture hall: F3

08.30  OLINER, A.A et al (Polytechnic University, Brooklyn, USA), Dominant mode leakage from printed-circuit waveguides
08.55  HOFFMAN, R (Philips Kommunikations Industrie, Köln, FRG), A new approach for the analysis of periodic planar transmission lines
09.20  NYQUIST, D.P (Michigan State University, USA), Deduction of EM phenomena in microstrip circuits from an integral-operator description of the system
09.45  NOSICH, A.I, SVEZHENTSEV, A.E (Ukr SSR, Academy of Sciences, Kharkov, USSR), Spectral theory of principal and higher order modes in open circular cylindrical slot and strip lines
10.10  FRIDBERG, P et al (Grodno State University, USSR), Investigation of ring planar structures
10.35  COFFEE BREAK
11.00  DELBARE, W, DE ZUTTER, D (University of Ghent, BELGIUM), Improved calculation of the capacitance and inductance matrix of multiconductor transmission line in multilayered dielectric media
11.25  LINNÉR, P (Chalmers University of Technology, Gothenburg, SWEDEN), Analysis of inhomogeneous, coupled transmission lines using network concepts
11.50  MARCZEWSKI, W (Polish Academy of Science, Warsaw, POLAND), Impedance definition problem in coupled overlapped microstrip lines
12.15  LERER, A.M et al (Rostov State University, USSR), Theory and application of planar transmission lines with periodic structures at the edges
12.40  CLOSE OF SESSION AND LUNCH

Thu Id  Reflector antennas

Chairman: G.A. THIELE, University of Dayton, USA
Lecture hall: F1

08.30  KILDAL, P-S (ELAB, Trondheim, NORWAY), A new approach to the synthesis of reflector antennas
08.55  CLARRICOATS, P.J.B et al (Queen Mary College, London, UK), The design of reconfigurable reflectors for spacecraft applications
09.20  RAHMAT-SAMII, Y (University of California Los Angeles, USA), Improved reflector antenna performance using an optimized feed array
09.45  MCNAIR, P.A.C, OLVER, A.D (Queen Mary College, London, UK), Prediction of compact antenna range performance by radiative coupling
10.10  COFFEE BREAK
10.35  BULME, S, KLINKENTUSCH, L (Ruhr-Universität Bochum, FRG), Field analysis of a spherical reflector with elliptical contour using multipole expansion
11.00  RAHMAN, F (Telesat Canada, Ottawa, CANADA), Analysis of offset parabolic reflector antenna of arbitrary configuration
11.25  POPOV, A.P (Bulgarian Academy of Sciences, BULGARIA), Geometrical optical synthesis of two-reflector antennas
11.50  VEREMEY, V.V, SHESTOPALOV, V.P (Ukr SSR Academy of Sciences, Kharkov, USSR), Superdirective radiation forming in antenna with passive resonant reflector
12.15  CLOSE OF SESSION AND LUNCH
### Thu IIa  Inverse scattering III

Chairman: G. KRISTENSSON, Lund University of Technology, SWEDEN

Lecture hall: F2

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### Thu IIb  Periodic structures

Chairman: R. PETIT, Faculté des Sciences, Marseille, FRANCE

Lecture hall: D1

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14.25  OKUNO, Y, IKUNO, H (Kumamoto University, JAPAN), The Yasuura method  619
14.50  ASVESTAS, J.S, GOLDRICK, C (Grumman Corporate Research Center, USA), Boundary integral equations for penetrable scatterers  622
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16.30  SUCHKOv, S.G (Central Research Institute of Measurement Equipment, Saratov, USSR), Complex stationary functionals for solving electrodynamic internal problems by Ritz method  631
16.55  ILYINSKI, A.S et al (Minsk Radioengineering Institute, USSR), Galerkin incomplete method with semi-inversion for diffraction problems in waveguides and gratings  633
17.20  SVESHNIKOV, A.G, EREMIN, JU.A (Moscow State University, Moscow, USSR), Analysis of multyparametric electrodynamic models by discrete sources method  636
17.45  CLOSE OF SESSION

Thu IId  Antenna theory
Chairman: Y RAHMAT-SAMII, University of California, Los Angeles, USA
Lecture hall: F3
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14.25  APETL’CIN, V.F, KYURKCHAN, A.G (Moscow, USSR), On the realization of far-field pattern by currents distributed on a closed curve  641
14.50  DESSOUKY, M.I.M (Menoufia University, EGYPT), Spectral estimation of antenna array signals using Burg’s method  644
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16.30  CLOSE OF SESSION