

## 28. Publications and Reports

### 28.1 Meeting Papers Presented

**Topical Meeting on Integrated and Guided-Wave Optics, Asilomar Conference Center,  
Pacific Grove, California**  
January 6-8, 1982

Papers in Technical Digest

H. A. Haus, Picosecond Sampling in Optical Waveguides (paper WA1-1 - WA1-4)

A. Lattes, C. Gabriel, and H. A. Haus, Double Degenerate Four-Wave Mixing in Optical Waveguides (paper ThA4-1 - ThA4-3)

R. H. Rediker, R. P. Schloss, A. Mooradian, and D. Welford, External Cavity Controlled Operation of a Semiconductor Diode Gain Element in a Series with an Optical Fiber (paper ThB2-1 - ThB2-4)

**159th Meeting, American Astronomical Society, Boulder, Colorado**  
January 10-13, 1982

Abstracts in Bull. Am. Astron. Soc. 13:4 (1981)

J. T. Armstrong and A. H. Barrett, Observations of HNCO in the SgrA Molecular Clouds (p. 853)

C. L. Bennett, C. R. Lawrence, J. Hewitt, and B. F. Burke, VLA Source Counts at 6 cm and 2 cm (p. 807)

P. T. P. Ho, S. Vogel, J. T. Armstrong, and A. H. Barrett, Observations of NH<sub>3</sub> Toward the SgrA Molecular Clouds (p. 853)

C. R. Lawrence, C. L. Bennett, J. Hewitt, and B. F. Burke, Observations at 6 cm of the 611 MHz Arecibo Source Sample (p. 807)

P. C. Myers, Low Mass Star Formation in the Dense Interior of Barnard 18 (p. 864)

E. L. Wright, M. Halpern, and R. Weiss, Sub-Millimeter Measurements of the Anisotropy of the Cosmic Microwave Background

**Engineering Foundation Conference on Modeling and Neuromuscular Systems, Santa  
Barbara, California**  
January 17-22, 1982

J. S. Perkell, Mathematical Models and the Physiology of Speech Production

**SPIE Technical Symposium and Exhibit, Los Angeles, California**

January 25-29, 1982

Papers in Proceedings Vol. 322

J. G. Fujimoto and M. M. Salour, Ultrafast Picosecond Chronography (pp. 137-165)

C. B. Roxlo, R. S. Putnam, and M. M. Salour, Optically Pumped Semiconductor Platelet Lasers (pp. 31-36)

**1982 March Meeting, American Physical Society, Dallas, Texas**

March 8-12, 1982

Abstracts in Bull. Am. Phys. Soc. 27:3 (1982)

A. N. Berker, Commensurate-Incommensurate Phase Diagrams from the Helical Potts Model (invited paper)

R. M. Bilotta, D. E. Pritchard, and J. A. Serri, Two-Dimensional Model for Rotationally-Vibrational Diatom Inelastic-Scattering (p. 387)

C. Jagannath, E. R. Youngdale, D. M. Larsen, R. L. Aggarwal, and P. A. Wolff, Four-Wave Magnetospectroscopy of the Ground-State of Donors in Germanium (p. 174)

K. Kash, P. A. Wolff, S. Y. Yuen, C. Jagannath, and W. A. Bonner, Free-Carrier-Induced Four-Wave Mixing in GaAs and GaSb (p. 175)

A. R. Kortan, High Resolution X-ray Study of Reentrant Nematic 60 CB-80 CB Mixtures (p. 366)

R. F. Kwasnick, M. A. Kastner, and J. Melngailis, Electronic Conduction in Ultra-Narrow Silicon Inversion Layers

J. B. McManus, P. A. Wolff, and R. L. Aggarwal, Difference Frequency Generation Using Thin Film Plasmons (p. 369)

L. R. Ram Mohan and P. A. Wolff, The Joint Density of States in Interband Transitions in Semiconductors in a Magnetic Field (p. 144)

S. Y. Yuen and P. A. Wolff, Difference-Frequency Variation of the Free Carrier-Induced, Third Order Nonlinear Susceptibility of n-InSb (p.175)

**NATO Advanced Research Institute, Microelectronics, Les des Alpes, France**

March 15-19, 1982

H. I. Smith, New Approaches to Single-Crystal Thin Films for Devices and Systems Using Surface Patterns

**First Japan/US Snow and Evapotranspiration Workshop, Tokyo, Japan**  
March 16-21, 1982

J. A. Kong, Theoretical Models for Remote Sensing of Snow

**Third Joint Varenna-Grenoble International Symposium on Heating in Toroidal Plasmas, Grenoble, France**  
March 22-27, 1982

S. F. Knowlton, M. Porkolab, and S. C. Luckhardt, Suppression of Plasma Formation in Waveguide Antennas for Low-Hybrid Heating

S. C. Luckhardt, P. T. Bonoli, K-I. Chen, B. Coppi, R. C. Englade, A. S. Fisher, S. F. Knowlton, M. J. Mayberry, and M. Porkolab, Lower-Hybrid RF Current Drive Experiments on the Versator II Tokamak

S. C. Luckhardt, G. Bekefi, P. T. Bonoli, K-I. Chen, B. Coppi, R. C. Englade, A. S. Fisher, K. E. Hackett, S. F. Knowlton, M. J. Mayberry, F. S. McDermott, M. Porkolab, J. S. Levine, M. E. Read, and V. L. Granatstein, Lower-Hybrid RF Current Drive and Electron Cyclotron Heating on the Versator II Tokamak

A. Ram and A. Bers, Antenna-Plasma Coupling Theory for ICRF Heating of Large Tokamaks

**Fifth Topical Meeting on Optical Fiber Communication and 1982 Conference on Lasers and Electro Optics, Phoenix, Arizona**  
April 13-16, 1982

H. A. Haus, High Speed Optical Waveguide Switching

A. M. Hawryluk, H. I. Smith, R. M. Osgood, and D. J. Ehrlich, Spatial-Period-Division Using an ArF Laser

M. M. Salour, In GaAsP Optically Pumped Semiconductor Platelet Lasers

M. M. Salour, Light-Induced Unidirectional Light Switching

**International Cochlear Implant Conference, New York Academy of Sciences, New York, New York**  
April 14-16, 1982

K. N. Stevens, Acoustic Properties Used for Identification of Speech Sounds

**Catgut Society Meeting, Dekalb, Illinois**  
April 23-26, 1982

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C. J. Chiang and A. J. M. Houtsma, A Comparison Between Expensive and Inexpensive Violin Strings

**Workshop on Symbolic Computing in Plasma Physics, Los Angeles, California**

April 23-30, 1982

R. Berman, Symbolic Computing, Introduction, Comparison of Different Systems, and Computational Physics Examples

**1982 Sherwood Meeting, Santa Fe, New Mexico**

April 25-28, 1982

P. T. Bonoli, R. Englade, and B. Coppi, Electron Thermal Transport in Plasmas with Auxiliary Heating

G. B. Crew and J. J. Ramos, High Beta Stability of Ideal MHD Fixed Boundary Modes

R. Englade and P. T. Bonoli, A Computational Model for Lower Hybrid Heating and Current Drive in Tokamaks

V. Krapchev, Current Drive by LH Waves in the Presence of DC Electric Field

F. Pegoraro and L. Sugiyama, Diffusion of Fusion-Produced Particles Due to Shear Alfvén Fluctuations

A. Ram and A. Bers, Antenna-Plasma Coupling Theory for ICRF Heating

J. J. Ramos and G. B. Crew, Stabilization of the Internal Kink Mode in Finite Beta Toroidal Plasmas

N. N. Sharky, Simulation of Electron Temperature Profiles for Different Values of  $\eta$

N. N. Sharky and B. Coppi, Electron Energy Confinement Time in Ohmically Heated Experiments

V. Stefan and A. Bers, Parametric Phenomena at Electron Cyclotron Resonance Heating of Tokamak Plasmas

L. Sugiyama and R. Englade, Energy Redistribution in Igniting Plasmas

**103rd Meeting, Acoustical Society of America, Chicago, Illinois**

April 27-30, 1982

Abstracts in J. Acoust. Soc. Am., Vol. 71, Suppl. No. 1, Spring 1982

C. Bickley, Acoustical Analysis and Perception of Breathless Vowels

M. A. Clements, L. D. Braida, and N. I. Durlach, Comparison of Two Tactile Speech Codes (p. S59)

S. DeGennaro, L. D. Braida, and N. I. Durlach, Multiband Syllabic Compression for Severely Impaired Listeners (p. S59)

A. J. M. Houtsma, Inharmonicity of Wound Guitar Strings (p. S9)

A. J. M. Houtsma and E. M. Burns, Temporal and Spectral Characteristics of Tambura Tones (p. S83)

D. H. Klatt, Speech Processing and Phonetic Recognition Strategies: What Can Be Learned from Auditory Physiology and Psychophysics? (p. S111)

L. S. Larkey, Another Look at Reiterant Speech in Prosody Research (p. S113)

P. Lieberman, K. Landhal, and J. H. Ryalls, Sentence Intonation in British and American English (p. S112)

J. S. Perkell, Advances in the Use of Alternating Magnetic Fields to Track Articulatory Movements (p. S32)

P. J. Price and A. G. Levitt, Prosody and the /š/-/č/ Distinction (p. S113)

D. W. Shipman, Development of Speech Research Software on the MIT Lisp Machine (p. S103)

K. N. Stevens and S. Hawkins, Acoustic and Perceptual Correlates of Nasal Vowels (p. S76)

V. W. Zue and D. W. Shipman, Properties of Large Lexicons: Implications for Advanced Isolated-Word Recognition Systems (p. S7)

P. M. Zurek, A Predictive Model for Binaural Advantages in Speech Intelligibility (p. S87)

**"Spectral Analysis and Its Use in Underwater Acoustics", Underwater Group Conference, Imperial College, London, England**

April 29-30, 1982

Papers in Proceedings

N. A. Malik and J. S. Lim, Implementation of a New Algorithm for Two-Dimensional Maximum Entropy Spectral Estimation (pp. 11.1 - 11.6)

J. H. McClellan and S. W. Lang, Multi-Dimensional MEM Spectral Estimation (pp. 10.1 - 10.8)

**1982 IEEE International Conference on Acoustics, Speech and Signal Processing, Palais des Congres, Paris, France**

May 3-5, 1982

Papers in Proceedings ICASSP '82

C. Espy and J. S. Lim, Effects on Noise on Signal Reconstruction from Fourier Transform Phase (pp. 1833-1836)

W. H. Evans and J. Allen, MOS Implementations of TTL Architectures: A Case Study (pp. 703-706)

D. H. Klatt, Prediction of Perceived Phonetic Distance from Critical-Band Spectra: A First Step (pp. 1278-1281)

A. L. Kurkjian, Maximum Likelihood Dereverberation with Applications in Sonic Well Logging (pp. 1862-1865)

L. F. Lamel and V. W. Zue, Performance Improvement in a Dynamic-Programming-Based Isolated Word Recognition System for Alpha-Digit Task (pp. 558-561)

S. W. Lang and J. H. McClellan, The Extension of Pisarenko's Method to Multiple Dimensions (pp. 125-128)

N. A. Malik, J. S. Lim, and M. J. Glaser, Properties of Two Dimensional Maximum Entropy Power Spectrum Estimates (pp. 129-132)

B. R. Musicus, An Iterative Algorithm for Finding Stable Solutions to the Covariance or Modified Covariance Autoregressive Modeling Methods (pp. 244-247)

H. Nawab, T. F. Quatieri, and J. S. Lim, Signal Reconstruction from the Short-Time Fourier Transform Magnitude (pp. 1046-1048)

D. W. Shipman and V. W. Zue, Properties of Large Lexicons: Implications for Advanced Isolated Word Recognition Systems (pp. 546-549)

**161st Meeting of the Electrochemical Society, Montreal, Canada**

May 9-14, 1982

Papers in Proceedings

H. I. Smith, H. A. Atwater, and M. W. Geis, Orientation Selection by Zone Melting Silicon Films Through Planar Constrictions

H. I. Smith and M. W. Geis, The Mechanism of Orientation in Si Graphoepitaxy Using a Strip-Heater Oven

**NATO Workshop on Target Background Modelling Techniques at Millimeter Wavelengths, Harry Diamond Laboratories, Adelphi, Maryland**

May 11-12, 1982

J. A. Kong, Active and Passive Remote Sensing of Earth Terrain at Millimeter Wavelengths

**47th Statistical Mechanics Meeting, Rutgers University, New Brunswick, New Jersey**  
May 13-14, 1982

M. Kardar, Phase Boundaries of the Isotropic Helical Potts Model on the Square Lattice

**Benjamin Franklin Symposium on Advances on Antenna Propagation and Microwave Technology, Philadelphia, Pennsylvania**  
May 15, 1982

S. L. Chuang and J. A. Kong, Extended Boundary Condition Approach to Wave Scattering by Periodic Structures

**1982 IEEE International Conference on Plasma Sciences, Ottawa, Canada**  
May 17-19, 1982

J. Fajans, G. Bekefi, and B. Lax, Insertion of Electrons into a FEL with Near Resonant Wiggler and Axial Magnetic Fields

V. Fuchs, M. Shoucri, L. Harten, and A. Bers, Steady High-Q Operation of Tokamak Reactors

D. D. Hinshelwood, The Effects of Current Flow on Cathode Plasma Formation on REB Diodes

R. E. Shefer, G. Bekefi, and D. A. Kirkpatrick, A Velocity Diagnostic for a High Current Lowbitron Beam

**U.R.S.I. National Radio Science Meeting, University of New Mexico, Albuquerque, New Mexico**  
May 24-28, 1982

Abstracts in Proceedings

A. Sezginer and J. A. Kong, Electromagnetic Wave Scattering by Thin Helical Wires (p. 60)

**NSF Grantee-User Meeting on Optical Communication Systems, University of California, Berkeley, California**  
June 2-4, 1982

C. Fonstad, III-V Heterostructure Devices for High Speed Fiber Communications

H. Haus, Optical-Waveguide Devices for Picosecond Signal Processing

J. H. Shapiro and D. J. Epstein, Atmospheric Optical Communications

**160th Meeting, American Astronomical Society, Troy, New York**

*Publications and Reports*

June 6-9, 1982

P. C. Myers and P. J. Benson, Cold Cloud Cores: NH<sub>3</sub> Observations

M. Shao, M. M. Colavita, P. M. Garnavich, and D. H. Staelin, The MIT-NRL Two-Color Dual Astrometric Stellar Interferometer

**1982 International Conference on Plasma Physics, Göteborg, Sweden**

June 7-15, 1982

P. T. Bonoli, B. Coppi, G. B. Crew, R. Englade, F. Pegoraro, J. J. Ramos, N. Sharky, and L. Sugiyama, Finite- $\beta$  Regimes and Transport Processes in Thermonuclear Plasmas

**The Second Telecommunications and Data Acquisition (TDA) Future Space Communications Technology Workshop, California Institute of Technology, Pasadena, California**

June 8, 1982

J. H. Lang and D. H. Staelin, Electrostatically-Figured Membrane Reflectors: Present and Future Technologies

**IEEE Conference on Pattern Recognition and Image Processing, Las Vegas, Nevada**

June 13-17, 1983

S. M. Goldwasser and D. E. Troxel, Page Composition of Continuous Tone Imagery (pp. 411-419)

**Nineteenth Design Automation Conference, Las Vegas, Nevada**

June 14-16, 1982

Papers in Proceedings

L. Seiler, A Hardware Assisted Design Rule Check Architecture (pp. 232-237)

**Kickoff Meeting, Fundamental Research Program, Goddard Space Flight Center, Greenbelt, Maryland**

June 15, 1982

J. A. Kong, Theoretical Models for Remote Sensing of Earth Terrain

**XII International Quantum Electronics Conference, München, Germany**

June 22-25, 1982

G. Bekefi, Rippled-Field Magnetron



G. Bekefi, W. A. McMullin, and R. E. Shefer, Lowbitron

H. A. Haus, A. Lattes, E. P. Ippen, and F. J. Leonberger, Optical Exclusive OR Gate

H. A. Haus, A. Lattes, C. Gabriel, E. P. Ippen, and F. J. Leonberger, Doubly Degenerate Four-Wave Mixing in  $\text{LiNbO}_3$  Waveguides

**Twentieth ISMM International Symposium, MIMI '82, on Minicomputers and Their Applications, Cambridge, Massachusetts**

July 7-9, 1982

D. E. Troxel, Spatial Coordinate Transformations

**"Clinical Implications of Research in Child Phonology", La Verne University, La Verne, California**

July 8-9, 1982

E. M. Maxwell, Recent Trends in Acoustic Analysis in Child Phonology

**6th International Conference on Spectral Line Shape, Boulder, Colorado**

July 12-17, 1982

D. E. Pritchard and R. E. Walkup, Transition Regions in Line Broadening

**NASA Workshop on Application of Distributed System Theory to the Control of Large Space Structures, Pasadena, California**

July 14-16, 1982

Y. Yam, J. H. Lang, T. L. Johnson, S. Shih, and D. H. Staelin, Large Space Structure Model Reduction and Control System Design Based Upon Actuator and Sensor Influence Functions

**2nd Trieste International Symposium on Statistical Mechanics of Adsorption Trieste, Italy**

July 26-29, 1982

A. N. Berker, Commensurate-Incommensurate Phase Diagrams from the Helical Potts Model (invited paper)

**Snow Symposium II, U.S. Army Cold Region Research and Engineering Laboratory, Hanover, New Hampshire**

August 10-12, 1982

R. T. Shin, J. C. Shiue, and J. A. Kong, Rough Surface Effects on the Passive Remote Sensing of Snow

*Publications and Reports*

J. C. Shiue, R. Shin, B. Hartline, J. Fuchs, J. A. Kong, and T. C. Chang, Microwave Radiometric Observations of Snowpack and Ice in North-Eastern U.S.

**SPIE 26th Annual International Technical Symposium, San Diego, California**

August 22-27, 1982

Papers in SPIE Vol.

P. van Hove, J. S. Lim, and A. V. Oppenheim, Signal Reconstruction from Fourier Transform Amplitude

**Ninth International Conference on Plasma Physics and Controlled Nuclear Fusion Research, Baltimore, Maryland**

September 1-8, 1982

P. T. Bonoli, B. Coppi, G. B. Crew, R. Englade, F. Pegoraro, J. J. Ramos, N. Sharky, and L. Sugiyama, Finite- $\beta$  Regimes, Transport Processes and Heating of Thermonuclear Plasmas

L. P. Harten, A. Bers, V. Fuchs, M. Shoucri, and G. Thibaudeau, Thermally Stable High-Q Reactor with Controlled Heating Power

M. Porkolab, J. J. Schuss, Y. Takase, S. Texter, C. Fiore, T. Gentile, R. Gandy, A. Gondhalekar, M. Greenwald, D. Gwinn, S. Kissel, B. Lipschultz, E. Marmor, D. Pappas, R. Parker, M. Pickrell, P. Pribyl, J. Rice, J. Terry, R. Watterson, S. Wolfe, S. F. Knowlton, S. C. Luckhardt, G. Bekefi, K. I. Chen, A. Fisher, K. Hackett, M. J. Mayberry, F. S. McDermott, A. Bers, P. T. Bonoli, B. Coppi, R. Englade, V. Krapchev, A. Ram, R. E. Slusher, C. M. Surko, J. S. Levine, M. E. Read, and V. L. Granatstein, Lower Hybrid Heating and Current Drive Experiments on the Alcator C and Versator II Tokamak

A. Ram, L. P. Harten, and A. Bers, Antenna-Plasma Coupling Theory for ICRF Heating of Large Tokamaks

**IEEE Solid State Circuits and Technology 1982 Fall Workshop, Village at Smuggler's Notch, Jeffersonville, Vermont**

September 8-10, 1982

J. Allen, A Vocal Tract Model IC

**American Chemical Society Meeting, Kansas City, Missouri**

September 15, 1982

D. H. Klatt, Text to Speech

**35th Annual Conference on Engineering in Medicine and Biology, Philadelphia, Pennsylvania**

September 22-24, 1982

Abstracts in Proceedings

H. S. Colburn, Communication-Theory Models of Binaural Interaction (p. 96)

**Tri-Service Workshop on Fiber Optic Sensors and Guided Wave Technology, U.S. Army  
Transportation Center, Ft. Eustis, Virginia**

October 5-8, 1982

S. Ezekiel, Overview of Fiber Optic Gyroscopes (invited paper)

**Large Scale Systems Symposium, Virginia Beach, Virginia**

October 11-13, 1982

L. A. Glasser and P. Penfield, Jr., VLSI Circuit Theory

**X International Symposium on Discharges and Electrical Insulation in Vacuum, Columbia,  
South Carolina**

October 25-28, 1982

D. D. Hinshelwood, The Role of Surface Contaminants in Cathode Plasma Formation

**IEEE 1982 Ultrasonics Symposium, San Diego, California**

October 27-29, 1982

Papers in Proceedings

D-P. Chen, J. Melngailis, and H. A. Haus, Filters Based on Conversion of Surface Acoustic Waves to Bulk Plate Modes in Gratings (pp. 67-71)

M. N. Islam, H. A. Haus, and J. Melngailis, Radiation Loss for Normal and Oblique Incidence Gratings (pp. 92-95)

**12th Annual Meeting, Society for Neuroscience, Minneapolis, Minnesota**

October 31 - November 5, 1982

Abstracts in Proceedings

L. S. Frishkopf, D. J. DeRosier, and E. H. Egelman, Motion of Basilar Papilla and Hair Cell Stereocilia in the Excised Cochlea of the Alligator Lizard: Relation to Frequency Analysis (paper 16:8, p. 40)

**Annual Meeting, Materials Research Society, Boston, Massachusetts**

November 1-4, 1982

A. N. Berker, Global Phase Diagrams with Order-Disorder and Structural Transitions: Renormalization-Group Approach (invited paper)

**24th Annual Meeting of the Division of Plasma Physics, American Physical Society, New Orleans, Louisiana**

November 1-5, 1982

Abstracts in Bull. Am. Phys. Soc. 27:8 (1982)

G. Bekefi, R. E. Shefer, and D. D. Nevins, The Rippled Field Magnetron (p. 1063)

R. Berman, D. Tetreault, and T. Dupree, Simulation of a Nonlinear Instability (p. 1105)

A. Bers and A. K. Ram, Relativistic Pulse Shapes of Absolute and Convective Instabilities (p. 919)

P. T. Bonoli, B. Coppi, and R. Englade, Electron Thermal Transport in Plasmas with "Injected" Heating (p. 963)

P. T. Bonoli, B. Coppi, and R. Englade, Analysis of Electron Thermal Transport in Plasmas with Auxiliary Heating (p. 963)

T. Chang, B. Coppi, and J. R. Jasperse, Monte Carlo Simulation of Ion Conic Formation by Lower Hybrid Modes in the Supraauroral Region (p. 1024)

K. I. Chen and M. E. Huber, Observation of Poloidally Asymmetric Line Emissions on the Versator II Tokamak (p. 1060)

B. Coppi, Physics of Neutronless Fusion Reactors (p. 1043)

B. Coppi, Magnetic Reconnection Driven by Velocity Space Instabilities (p. 1071)

G. B. Crew, B. Coppi, and J. J. Ramos, Internal Kink Modes in High Temperature Collisionless Regimes (p. 914)

T. H. Dupree, Simulation and Theory of Holes and Clumps (p. 1038)

R. Englade, P. T. Bonoli, and M. Porkolab, Numerical Simulations of Lower Hybrid Current Drive Experiments (p. 1069)

V. Fuchs, G. Thibaudeau, V. Krapchev, A. Ram, and A. Bers, Diffusion and Momentum Transfer for Particles Interacting with Coherent Wavepackets (p. 957)

R. F. Gandy, M. Porkolab, and J. J. Schuss, Cyclotron Emission During RF Current Drive on Alcator C (p. 937)

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- Read, and V. L. Granatstein, Results from the Electron Cyclotron Heating Experiment on the Versator II Tokamak (p. 1081)
- A. Hamza, N. Sharky, and B. Coppi, Analysis of Electron Power Balance in Ohmically Heated Discharges (p. 1126)
- D. D. Hinshelwood, The Role of Surface Contaminants in Cathode Plasma Formation (p. 1030)
- K. Hizanidis, V. B. Krapchev, and A. Bers, Current Drive by Lower-Hybrid Waves Acting on Runaway Electron Tail (p. 1006)
- D. Humphreys, R. Englade, and L. Sugiyama, Transport in the Presence of "Sawtooth" Oscillations from Thermonuclear Plasmas (p. 1127)
- K. D. Jacobs and G. Bekefi, Electron Motion in a Free Electron Laser (p. 1010)
- J. Kesner and B. Lane, Effects of Collisional Dissipation on Tandem Mirrors Trapped Particle Modes (p. 914)
- R. E. Klinkowstein, J. Kesner, B. D. McVey, R. S. Post, D. K. Smith, and T. F. Yang, The TARA Tandem Mirror Experiment (p. 967)
- S. F. Knowlton, K. I. Chen, S. C. Luckhardt, M. J. Mayberry, and M. Porkolab, Ion Heating by Lower-Hybrid Waves in the Versator II Tokamak (p. 1005)
- V. B. Krapchev, K. Hizanidis, and A. Bers, Current Drive by LH Waves in the Presence of a DC Electric Field (p. 1006)
- R. M. Kulsrud, Fusion with Polarized Ions (invited paper) (p. 1038)
- B. Lane and H. L. Berk, Effect of Ion Landau Bounce Resonance on Tandem Mirror Trapped Particle Modes (p. 910)
- S. C. Luckhardt, M. Porkolab, S. F. Knowlton, K. I. Chen, M. J. Mayberry, F. S. McDermott, and J. S. Levine, RF Current Drive Experiments on Versator II (p. 1005)
- F. S. McDermott, G. Bekefi, A. S. Fisher, K. E. Hackett, S. F. Knowlton, S. C. Luckhardt, M. J. Mayberry, M. Porkolab, R. Rohatgi, and J. S. Levine, Runaway-Driven Instabilities During RF Heating and Current Drive Experiments on the Versator II Tokamak (p. 1104)
- M. Porkolab, J. J. Schuss, Y. Takase, S. Texter, J. Machuzak, P. Bonoli, C. Fiore, R. Gandy, R. Granetz, M. Greenwald, D. Gwinn, B. Lipschultz, E. Marmor, S. McCool, D. Pappas, R. Parker, P. Pribyl, J. Rice, J. Terry, R. Watterson, and S. Wolf, Lower Hybrid Current Drive on the Alcator C Tokamak (p. 1103)
- J. J. Ramos and G. B. Crew, Asymptotic Theory of the Internal Kink Mode in Finite Beta Tokamaks (p. 1094)
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N. Sharky, R. Englade, and B. Coppi, Simulation of Electron Temperature Profiles in Various Experiments (p. 1001)

R. E. Shefer, D. A. Kirkpatrick, and G. Bekefi, A Velocity Diagnostic for Relativistic Electron Beams (p. 1061)

L. Sugiyama, Effect of an  $m^{\circ} = 1$  Magnetic Island on Energy Deposition in Igniting Plasmas (p. 1130)

Y. Takase, M. Porkolab, and J. J. Schuss, Convective Effects on Parametric Excitation of Ion-Sound Quasi-Modes During LHRF Heating of Tokamak Plasmas (p. 1103)

D. Tetreault, Growth Rate of the Clump Instabilities (p. 1105)

G. Vlad and B. Coppi, Bremsstrahlung Cooled "couche" of Tritiumless Plasmas (p. 1043)

S. M. Wolfe, B. Blackwell, C. L. Fiore, W. Fisher, R. Gandy, R. S. Granetz, M. Greenwald, D. Gwinn, S. Kissel, B. Labombard, M. Porkolab, P. Pribyl, and Y. Takase, Scaling of Energy Confinement with Limiter Geometry in Alcator C (p. 936)

**104th Meeting, Acoustical Society of America, Orlando, Florida**

November 9-12, 1982

Abstracts in J. Acoust. Soc. Am. Vol. 72, Suppl. No. 1, Fall 1982

M. Florentine and A. J. Houtsma, Tuning Curves and Pitch Matches in Unilateral Low-Frequency Hearing Loss: A Case Study (p. S67)

G. V. Frisk, D. R. Mook, J. A. Doult, E. E. Hays, and A. V. Oppenheim, The Application to Real Data of a Technique for Measuring the Planewave Reflection Coefficient of the Ocean Bottom (p. S97)

M. Hamada, Nasal Vowel Identification Using LPC-Based Formant Analysis (p. S30)

D. H. Klatt and D. W. Shipman, Letter-to-Phoneme Rules. A Semi-Automatic Discovery Procedure (p. S48)

G. E. Kopec, M. A. Bush, and V. W. Zue, Toward an Expert System for Automatic Stop Consonant Identification (p. S48)

M. A. Randolph and V. W. Zue, Synthesis of Continuous Speech by Concatenation of Isolated Words (p. S79)

S. Shattuck-Hufnagel, Position Constraints on Interacting Segments in Elicited Errors Favor the Word Over the Stressed Syllable (p. S48)

K. N. Stevens, S. H. Blumenthal, D. M. Green, and M. Krasner, Ear-Canal Resonances and the Assessment of Hearing Thresholds at High Frequencies (p. S6)

**American Speech-Language-Hearing Association Meeting, Toronto, Canada**  
November 18-21, 1982

E. M. Maxwell, On the Convergence of Evidence in Phonological Analysis

**Large Space Antenna Systems Technology - 1982, NASA Langley Research Center**  
November 30 - December 3, 1982

J. H. Lang, Electrostatically-Figured Membrane Reflectors: An Overview

**1982 International Conference on Lasers, New Orleans, Louisiana**  
December 13-17, 1982

Abstracts in Technical Digest

Papers in Proceedings

G. Bekefi, Free Electron Laser Hybrids (invited paper) (p. 4)

S. Ezekiel, Application of the Sagnac Effect in Optical Gyroscopes (invited paper) (p. 24)

J. H. Shapiro, Mysteries and Applications of Two-Photon Coherent States (invited paper) (p. 4)

**48th Statistical Mechanics Meeting, Rutgers University, New Brunswick, New Jersey**  
December 16-17, 1982

D. Blankschtein, New Universality Class in Ferroelectrics

M. Kardar, Phase Transition in New Solvable Hamiltonians by a Central-Limit Minimization

## **28.2 Journal Papers Published**

D. Andelman and J. S. Walker, Preserving the Free Energy in a Migdall-Kadanoff Approximation for the q-State Potts Model (Phys. Rev. B 27:1, 241-247 (1983))

K. Baden-Kristensen and T. F. Weiss, Supporting Cell and Extracellular Responses to Acoustic Clicks in the Free-Standing Region of the Alligator Lizard Cochlea (Hearing Res. 8, 295-315 (1982))

K. Baden-Kristensen and T. F. Weiss, Receptor Potentials of Lizard Hair Cells with Free-Standing Stereocilia: Responses to Acoustic Clicks (J. Physiol. 335, 699-721 (1983))

*Publications and Reports*

- D. Bendedouch, S-H. Chen, and W. C. Koehler, Structure of Ionic Micelles from Small Angle Neutron Scattering (J. Chem. Phys. 87:1, 153-159 (1983))
- A. Bers and K. S. Theilhaber, Three-Dimensional Theory of Waveguide-Plasma Coupling (Nucl. Fusion 23:1, 41-48 (1983))
- R. J. Birgeneau, C. W. Garland, A. R. Kortan, J. D. Litster, M. Meichle, B. M. Ocko, C. Rosenblatt, L. J. Yu, and J. Goodby, The Smectic-A-Smectic-C Transition: Mean Field or Critical (Phys. Rev. **A** 27:2, 1251-1254 (1983))
- S. Chase, P. Bugnacki, L. D. Braida, and N. I. Durlach, Intensity Perception XII. Effect of Presentation Probability on Absolute Identification (J. Acoust. Soc. Am. 73:1, 279-284 (1983))
- S. L. Chuang and J. A. Kong, Wave Scattering and Guidance by Dielectric Waveguides with Periodic Surfaces (J. Opt. Soc. Am. 73:5, 669-679 (1983))
- B. Coppi, Physics of Neutronless Fusion Reacting Plasmas (Phys. Scri. Vol. T2:2, 590-595 (1982))
- R. C. Davidson and H. S. Uhm, Stability Properties of an Intense Relativistic Nonneutral Electron Ring in a Modified Betatron Accelerator (Phys. Fluids 25:1, 2089-2100 (1982))
- M. Florentine and A. J. M. Houtsma, Tuning Curves and Pitch Matches in a Listener with a Unilateral Low-Frequency Hearing Loss (J. Acous. Soc. Am. 73:3, 961-965 (1983))
- D. A. Fishman and F. R. Morgenthaler, Investigation of the Velocity of Energy Circulation of Magnetostatic Modes in Ferrites (J. Appl. Phys. 54:6, 3387-3393 (1983))
- V. Fuchs, M. M. Shoucri, G. Thibaudeau, L. Harten, and A. Bers, High-Q Thermally Stable Operation of a Tokamak Reactor (IEEE Trans., Vol. PS-11, No. 1, pp. 4-18, March 1983)
- W. J. Glantschnig and S-H. Chen, Light Scattering from Water Droplets in the Geometrical Optics Approximation (Appl. Opt. 20:14, 2499-2509 (1981))
- T. M. Habashy, S. M. Ali, and J. A. Kong, Impedance Parameters and Radiation Pattern of Two Coupled Circular Microstrip Disk Antennas (J. Appl. Phys. 54:2, 493-506 (1983))
- M. G. Hall, A.V. Oppenheim, and A. S. Willsky, Time-Varying Parametric Modeling of Speech (Signal Processing 5, 267-285 (1983))
- H. A. Haus and M. N. Islam, Application of a Variational Principle to Systems with Radiation Loss (IEEE J., Vol. QE-19, No. 1, pp. 106-117, January 1983)
- H. A. Haus and L. Molter-Orr, Coupled Multiple Waveguide Systems (IEEE J., Vol. QE-19, No. 5, pp. 840-844, May 1983)
- C. M. Horwitz, RF Sputtering - Voltage Division Between Two Electrons (J. Vac. Sci. Technol. A1:1, 60-68 (1983))
- J. Ihm and J. D. Joannopoulos, Structure of the Al-GaAs(110) Interface from an Energy-Minimization Approach (Phys. Rev. B 26:8, 4429-4435 (1982))



- Y. Ito, H. S. Colburn, and C. L. Thompson, Masked Discrimination of Interaural Time Delays with Narrowband Signal (J. Acoust. Soc. Am. 72:6, 1821-1826 (1982))
- T. H. Joo and J. H. McClellan, Pole-Zero Modelling and Classification of Phonocardiograms (IEEE Trans., Vol. BME-30, No. 2, pp. 110-118, February 1983)
- P. A. Keating, Book Review: G. H. Yeni-Komshian, J. F. Kavanagh, and C. A. Ferguson (Eds.), Child Phonology, Vol. 1: Production; Vol. 2: Perception (Academic Press, New York, 1980), Vol. 1, pp. 304 and Vol. 2, pp. 254 (Language 58:3, 719-721 (1982))
- M. Kardar, Phase Boundaries of the Isotropic Helical Potts Model on a Square Lattice (Phys. Rev. B 26:5, 2693-2699 (1982))
- G. E. Kopec, A. V. Oppenheim, and R. Davis, Knowledge-Based Signal Processing (Trends Perspect. Sig. Processing 2:1, 1-6 (1982))
- P. Kumar and R. S. Bondurant, Improving the Pulse Shape in Dye Laser Amplifiers: A New Technique (Appl. Opt. 22:9, 1284-1287 (1983))
- S. W. Lang and J. H. McClellan, Multi-Dimensional MEM Spectral Estimation (IEEE Trans., Vol. ASSP-30, No. 6, pp. 880-887, December 1982)
- S. W. Lang and J. H. McClellan, Spectral Estimation for Sensor Arrays (IEEE Trans., Vol. ASSP-31, No. 2, pp. 349-358, April 1983)
- L. S. Larkey, Reiterant Speech: An Acoustic and Perceptual Validation (J. Acoust. Soc. Am. 73:4, 1337-1345 (1983))
- C. R. Lawrence, C. L. Bennett, A. J. Garcia-Barreto, P. E. Greenfield, and B. F. Burke, 5 GHz Observations of Sources in the Arecibo 611 MHz Survey (Astrophys. J. (Suppl.) 51, 67-114 (1983))
- J. H. McClellan, Multidimensional Spectral Estimation (IEEE Proc. Vol. 70, No. 9, pp. 1029-1039, September 1982)
- J. H. McClellan and S. W. Lang, Duality for Multidimensional MEM Spectral Estimation (Proc. IEEE, Vol. 130, Pt F, No. 3, pp. 230-235, April 1983)
- F. S. McDermott, G. Bekefi, K. E. Hackett, J. S. Levine, and M. Porkolab, Observation of the Parametric Decay Instability During Electron Cyclotron Resonance Heating on the Versator II Tokamak (Phys. Fluids 25:9, 1488-1490 (1982))
- L. Menn and S. Boyce, Fundamental Frequency and Discourse Structure (Language and Speech, Vol. 25, Part 4, pp. 341-383 (1982))
- P. C. Myers and A. H. Barrett, Search for Maser Emission by Water Vapor in the  $\nu_2$  Excited Vibrational State (Astrophys. J. 263, 716-717 (1982))
- P. C. Myers and P. J. Benson, Dense Cores in Dark Clouds. II.  $\text{NH}_3$  Observations and Star Formation (Astrophys. J. 266, 309-320 (1983))

- F. Pegoraro and L. Sugiyama, Spatial Diffusion of Charged Energy Fusion Products by Shear-Alfvén Perturbations (Nucl. Fusion 23:4, 407-424 (1983))
- L. R. Ram-Mohan and P. A. Wolff, Joint Density of States in Interband Transitions in Semiconductors in a Magnetic Field (Phys. Rev. B 26:12, 6711-6718 (1982))
- C. H. Shadle, Experiments on the Acoustics of Whistling (Phys. Teacher, pp. 148-154, March 1983)
- W. P. Spencer, A. G. Vaidyanathan, D. Kleppner, and T. W. Ducas, Photoionization by Blackbody Radiation (Phys. Rev. A 26:3, 1490-1493 (1982))
- D. H. Staelin and P. W. Rosenkranz, Formation of Jovian Decametric S-Bursts by Modulated Electron Streams (J. Geophys. Res. 87:A12, 10,401-10,406 (1982))
- D. D. Stancil and F. R. Morgenthaler, Guiding Magnetostatic Surface Waves with Nonuniform In-Plane Fields (J. Appl. Phys. 54:3, 1613-1618 (1983))
- M. Stix and E. P. Ippen, Pulse Shaping in Passively Mode-Locked Ring Dye Lasers (IEEE J., Vol. QE-19, No. 4, pp. 520-525, April 1983)
- A. D. Stone, D. C. Allen, and J. D. Joannopoulos, Phase Randomness in the One-Dimensional Anderson Model (Phys. Rev. B 27:2, 836-843 (1983))
- A. G. Vaidyanathan, W. P. Spencer, J. A. Rubbmark, H. Kuiper, C. Fabre, and D. Kleppner, Experimental Study of Non-Adiabatic Core Interactions in Rydberg States of Calcium (Phys. Rev. A 26:6, 3346-3350 (1982))

### **28.3 Journal Papers Accepted for Publication**

- P. J. Benson and P. C. Myers, Dense Cores in Dark Clouds. IV. HC<sub>5</sub>N Observations (Astrophys. J.)
- R. H. Berman, D. J. Tetreault, and T. H. Dupree, Observation of Self-binding Turbulent Fluctuations in Simulation Plasma and Their Relevance to Plasma Kinetic Theories (Phys. Fluids)
- R. A. Close, A. Palevsky, and G. Bekefi, Radiation Measurements from an Inverted Relativistic Magnetron (J. Appl. Phys)
- G. B. Crew and J. J. Ramos, Asymptotic Theory of the Internal Kink Mode in Current Carrying Toroidal Plasmas (Phys. Fluids)
- S. L. Dexheimer, T. A. Brunner, and D. E. Pritchard, Angular Momentum Limitation in Vibrationally Inelastic Collisions of I<sub>2</sub>(B<sup>3</sup>Π) with He and Xe (J. Chem. Phys.)
- J. W. Dreher and W. J. Welch, VLA Observations of MWC 349 at 15 and 23 GHz (Astron. J.)
- T. H. Dupree, Growth of Phase Space Density Holes (Phys. Fluids)

- H. A. Haus and M. N. Islam, Synchrotron Radiation of Wiggled Electron Beam in Rectangular Waveguide (J. Appl. Phys.)
- T. Holton and T. F. Weiss, Receptor Potentials of Lizard Cochlear Hair Cells with Free-Standing Stereocilia in Response to Tones (J. Physiol.)
- T. Holton and T. F. Weiss, Frequency Selectivity of Hair Cells and Nerve Fibers in the Alligator Lizard Cochlea (J. Physiol.)
- B. Howland, New Test Patterns for Camera Lens Evaluation (Appl. Opt.)
- Y. Q. Jin and J. A. Kong, Passive and Active Remote Sensing of Atmospheric Precipitation (Appl. Opt.)
- M. Kardar, Crossover to Equivalent-Neighbor Multicritical Behavior in Arbitrary Dimensions (Phys. Rev. B)
- M. Kotlarchyk and S-H. Chen, Analysis of Small Angle Neutron Scattering Spectra from Polydisperse Interacting Colloids (J. Chem. Phys.)
- R. E. Meyer, G. A. Sanders, and S. Ezekiel, Observation of Spatial Variations in the Resonance Frequency of an Optical Resonator (J. Opt. Soc. Am.)
- C. M. Reed, B. L. Hicks, L. D. Braida, and N. I. Durlach, Discrimination of Speech Processed by Lowpass Filtering and Pitch-Invariant Frequency Lowering (J. Acoust. Soc. Am.)
- A. Sezginer and J. A. Kong, Physical Optics Approach for Scattering by Thin Helical Wires (Radio Sci.)
- A. Sezginer, S. L. Chuang, and J. A. Kong, Modal Approach to Scattering of Electromagnetic Waves by a Conducting Tape Helix (IEEE Trans. (AP))
- H. I. Smith, C. V. Thompson, M. W. Geis, R. A. Lemons, and M. A. Bosch, The Mechanism of Orientation in Si Graphoepitaxy by Laser or Strip-Heater Recrystallization (J. Electrochem. Soc.)
- L. Tsang and J. A. Kong, Scattering of Electromagnetic Waves from a Half Space of Densely Distributed Dielectric Scatterers (Radio Sci.)
- H-Z. Wang, Estimation of Snow Depth with Measured Brightness Temperatures (J. Geophys. Res.)

## **28.4 Letters to the Editor Published**

- H. A. Atwater, H. I. Smith, and M. W. Geis, Orientation Selection by Zone-Melting Silicon Films Through Planar Constrictions (Appl. Phys. Lett. 41:8, 747-749 (1982))

*Publications and Reports*

- D. Bendedouch and S-H. Chen, Structure and Interparticle Interaction of Bovine Serum Albumin in Solution Studies by Small-Angle Neutron Scattering (J. Phys. Chem. 87:9, 1473-1477 (1983))
- D. Bendedouch and S-H. Chen, Study of Intermicellar Interaction and Structure by Small Angle Neutron Scattering (J. Chem. Phys. 87:10, 1653-1658 (1983))
- C. L. Bennett, C. R. Lawrence, J. A. Garcia-Barreto J. N. Hewitt, and B. F. Burke, VLA Source Counts at 6 cm Wavelength (Nature, Vol. 301, No. 5902, pp. 686-687 (1983))
- R. S. Bondurant, P. Kumar, J. H. Shapiro, and M. M. Salour, Photon Counting Statistics of Pulsed Light Sources (Optics Lett. 7:11, 529-531 (1982))
- C. M. Horwitz, New Dry Etch for Al and Al-Cu-Si Alloy: Reactively Masked Sputter Etching with SiF<sub>4</sub> (Appl. Phys. Lett. 42:10, 402-404 (1982))
- K. Kash, P. A. Wolff, and W. A. Bonner, Nonlinear Optical Studies of Picosecond Relaxation Times of Electrons in n-GaAs and n-GaSb (Appl. Phys. Lett. 42:2, 173-175 (1983))
- A. R. Kortan, A. Erbil, R. J. Birgeneau, and M. S. Dresselhaus, Commensurate-Incommensurate Transition in Bromine-Intercalated Graphite: A Model Stripe-Domain System (Phys. Rev. Lett. 49:19, 1427-1430 (1982))
- Y. T. Li and A. L. Kurkjian, Arrival Time Estimation Using Iterative Signal Reconstruction from the Phase of the Cross Spectrum (IEEE Trans., Vol. ASSP-31, No. 2, pp. 502-504, April 1983)
- J. S. Lim, J. C. Anderson, and C. L. Searle, Signal Reconstruction from Cosine Transform Magnitude (Proc. IEEE (Correspondence), Vol. 70, No. 12, pp. 1460-1462, December 1982)
- J. S. Lim and F. U. Dowla, A New Algorithm for High-Resolution Two-Dimensional Spectral Estimation (Proc. IEEE (Correspondence), Vol. 71, No. 2, pp. 284-285, February 1983)
- J. B. McManus, Far-Infrared Radiation from Thin-Plasmons Excited at the Difference Frequency of Two CO<sub>2</sub> Lasers (Appl. Phys. Lett. 41:8, 692-694 (1982))
- B. W. Peuse, M. G. Prentiss, and S. Ezekiel, Elimination of Line-Shape Distortion in Laser Absorption Spectroscopy in Atomic Beams (Optics Lett. 8:3, 154-156 (1983))
- C. R. Safinya, L. S. Martinez-Miranda, M. Kaplan, J. D. Litster, and R. J. Birgeneau, High-Resolution X-Ray Scattering Study of the Nematic-to-Smectic-C Transitions in 8S5-7S5 Mixtures (Phys. Rev. Lett. 50:1, 56-59 (1983))
- R. E. Tench and S. Ezekiel, Precision Measurements of Hyperfine Predissociation in I<sub>2</sub> Vapor Using a Two-Photon Resonant Scattering Technique (Chem. Phys. Lett. 96:2, 253-258 (1983))
- S. Y. Yuen, Third Order Optical Nonlinearity Induced by Effective Mass Gradient in Heterostructures (Appl. Phys. Lett. 42:4, 331-333 (1983))
- S. Y. Yuen and P. Becla, Saturation of Band-Gap Resonant Optical Phase Conjugation in HgCdTe (Optics Lett. 8:7, 356-358 (1983))

M. L. Zimmerman, R. G. Hulet, and D. Kleppner, Comparisons of Approximate Bases for Hydrogen in a Magnetic Field (Phys. Rev. A (Letter) 27:5, 2731-2734 (1983))

## 28.5 Letters to the Editor Accepted for Publication

J. G. Fujimoto and E. P. Ippen, Transient Four-Wave Mixing and Optical Pulse Compression in the Femtosecond Regime (Optics Lett.)

P. R. Hemmer, S. Ezekiel, and C. C. Leiby, Jr. Stabilization of a Microwave Oscillator Using a Resonance Raman Transition in a Sodium Beam (Optics Lett.)

## 28.6 Special Publications

M. Halle and P. Kiparsky, Internal Constituent Structure and Accent in Russian Words, in E. A. Scatton, R. D. Steele, and C. E. Gribble (Eds.), Studies in Honor of Horace G. Lunt (Folia Slavica, Vol. 3, Ns. 1-2, Slavica Publishers, Inc., Columbus, Ohio, 1979), pp. 128-153

J. R. Ross, When the Be's Go, the Frost Comes, in G. Bedell, E. Kobayashi, and M. Muraki (Eds.), Explorations in Linguistics, Papers in Honor of Kazuko Inoue (Kenkyusha, Tokyo, Japan, 1980), pp. 464-470

## 28.7 Technical Reports Published

*These and previously published Technical Reports, if available, may be obtained from the Document Room, 36-412, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139*

- 497 Douglas Mook, The Numerical Synthesis and Inversion of Acoustic Fields Using the Hankel Transform with Application to the Estimation of the Plane Wave Reflection Coefficient of the Ocean Bottom
- 498 David Izraelevitz, Overspecified Normal Equations for Spectral Estimation
- 499 Alain C. Briançon, A 8.45 GHz GaAs FET Amplifier

