

30.0 RLE Publications and Papers Presented

The first section of this bibliography includes papers presented at conferences and meetings by RLE faculty, staff and students during 1987, and is in chronological order by the month the conference was held. Reprints of papers may be obtained by contacting the authors directly.

Sections 30.2 and 30.3 are alphabetical listings by author of journal articles and letters to the editor that were published or accepted for publication. Chapters by RLE authors within books are given in Section 30.4. The last two sections of the bibliography list RLE technical reports and special publications.

30.1 Meeting Papers Presented

January 1987

Physics of Quantum Electronics Conference, Snowbird, Utah, January 3-7, 1987

Ippen, E.P., "Femtosecond Studies of Material and Devices."

169th Meeting of the American Astronomical Society, Pasadena, California, January 4-8, 1987

Abstracts in *Bull. Am. Astron. Soc.* 18(4) (1986):

Carilli, C.L., and J.H. van Gorkom, "Coincident 21 cm and Ca II Absorption Towards PKS2020-370," p. 969.

Dhawan, V., B. Burke, N. Bartel, I. Shapiro, A. Rogers, K. Johnston, J. Spencer, C. Lawrence, A. Readhead, D. Graham, I. Pauling-Toth, R. Booth, B. Rönnäng, and H. Hirabayashi, "VLBI at Seven-Millimeter Wavelength with 70 Marsec Resolution," p. 970.

Dreher, J.W., J. Lehar, D.H. Roberts, and A.G. deBruyn, "Rapid Time Variability of OJ 287 at Centimeter Wavelengths," p. 1046.

Jackson, J.M., W.J. Welch, and J.W. Dreher, "Identification of the Most Luminous Outflow Source in W49," p. 1029.

Langston, G.I., B.F. Burke, E.L. Turner, and C.R. Lawrence, "Faint Radio Sources in the Field of 1146+111 B, C: Tests Gravitational Lens Models," p. 930.

Roberts, D.H., J. Lehar, and J.W. Dreher, "Time Series Spectral Analysis with CLEAN," p. 945.

Shao, M., M.M. Colavita, B. Hines, D. Staelin, J. Hershey, J. Hughes, K. Johnston, D. Hutter, D. Mozurkewich, and R. Simon, "Preliminary Results from the Mark III Stellar Interferometer," p. 967.

Opto-Electronic Laser '87 and Electro-Optic Imaging Symposium, Los Angeles, California, January 11-16, 1987

Papers in *SPIE 751*:

Burke, B.F., "Aperture-Synthesis Interferometry at Optical Wavelengths," pp. 50-61.

National Radio Science Meeting, University of Colorado, Boulder, Colorado, January 12-15, 1987

Abstract in *Proceedings*:

Kuo, S.P., M.C. Lee, and F.T. Djuth, "New Interpretation of Plasma-Line Overshoot Phenomenon," p. 298.

Second Topical Meeting on Picosecond Electronics and Optoelectronics, Incline Village, Nevada, January 14-16, 1987

Brorson, S.D., J.G. Fujimoto, and E.P. Ippen, "Femtosecond Nonequilibrium Heat Transport in Thin Gold Films."

Colloquium on Energy, Polytechnic of Milan and University of Pavia, Voghera, Italy, January 17, 1987

Coppi, B., "Energy in the Universe."

February 1987

Midwinter Meeting of the Association for Research in Otolaryngology, Clearwater, Florida, February 1-6, 1987

Rosowski, J.J., C.R. Robinson, and W.T. Peake, "Accessory Acoustic Pathways to the Middle Ear of the Alligator Lizard: the Consequences of the Lack of a Bony Middle-Ear Capsule."

Second Airborne Science Workshop, University of Miami, Miami, Florida, February 3-6, 1987

Staelin, D.H., "Application of Airborne Passive Microwave Observations." (invited paper)

International Rosenbluth Symposium on Dynamics of Particles and Plasmas, University of Texas, Austin, Texas, February 5-6, 1987

Coppi, B., "Plasma Collective Modes and Transport."

Optical Society of America Symposium on the Microphysics of Surfaces, Beams, and Adsorbates, Santa Fe, New Mexico, February 14-17, 1987

Shedd, G.M., A.D. Dubner, H. Lezec, and J. Melngailis, "Focused Ion Beam Induced Deposition of Gold."

Speech-Research V Symposium, Washington, D.C., February 18-19, 1987

Feder, M., and A.V. Oppenheim, "Methods for Noise Cancellation Based on the E-M Logarithm."

International Solid State Circuits Conference, New York, February 25, 1987

Allen, J., Moderator for panel, "ASIC Architectures for the '90's."

National Energy Conference, Industry Commission, Italian Parliament, Rome, Italy, February 27, 1987

Coppi, B., "State and Problems on Nuclear Fusion Research."

March 1987

Advanced Course in Physics, University of Pavia, Pavia, Italy, March 4, 1987

Coppi, B., "Outstanding Plasma Problems in Astrophysics."

IEEE 1987 Particle Accelerator Conference, Washington, D.C., March 16-19, 1987

Abstract in *Proceedings*:

Hartemann, F., G. Bekefi, D.A. Kirkpatrick, R.E. Klinkowstein, and R.E. Shafer, "Evolution of Beam Emittance and Cathode Plasma Uniformity from a Field Emission Diode."

March Meeting of the American Physical Society, New York, March 16-20, 1987

Abstracts in *Proceedings*:

Bar-Yam, Y., S.T. Pantelides, and J.D. Joannopoulos, "*Ab-Initio* Theory of Silicon Dioxide," p. 537.

Birgeneau, R.J., "Scattering Studies of Novel Low Dimensional Phases and Phase Transitions," p. 503.

Chung, J.W., E.D. Specht, K.W. Evans-Lutterodt, R.J. Birgeneau, A.R. Kortan, and P.J. Estrup, "Synchrotron X-Ray Study of Superlattice Diffraction Peaks from an Epitaxial Oxide Layer on a W(100) Surface," p. 452.

Ippen, E.P., "Femtosecond Phenomena and Their Applications," p. 743.

Kaxiras, E., "Variable Stoichiometry Surface Reconstruction: New Models and Phase Transitions on GaAs(111)2x2," p. 709. (invited paper)

Kaxiras, E., J.D. Joannopoulos, and K.C. Pandey, "New Models for the (2x4), c(2x8) and c(4x4) Surface Reconstructions of GaAs(100)," p. 710.

McIntyre, C.R., and P.A. Wolff, "A Variational Approach to Bound Magnetic Polarons in Dilute Magnetic Semiconductors," p. 527.

McKay, S.R., and A.N. Berker, "Hybrid Order Phase Transition of the d=3 Random-Field Ising Model from a Global Renormalization-Group Calculation," p. 823.

Needels, M.C., M.C. Payne, and J.D. Joannopoulos, "Ab-Initio Molecular Dynamics on the Ge(100) Surface," p. 572.

Payne, M.C., P.D. Bristowe, and J.D. Joannopoulos, "Calculation of the Structure of a $\Sigma=5$ Twist Boundary in Germanium by Simulated Annealing," p. 721.

Smith, H.I., "X-Ray Nanolithography for Sub 100-nm Devices," p. 628. (invited paper)

Tarnow, E., M.C. Payne, and J.D. Joannopoulos, "Intrinsic Defects in c-As₂Se₃," p. 789.

Wong, S., P. Becla, and P.A. Wolff, "Magnetic Field Dependent Nonlinear Current-Voltage Characteristics in HgMnTe," p. 491.

New England Combined Chapter of the American Vacuum Society, Bedford, Massachusetts, March 18, 1987

Melngailis, J., "Focused Ion Beam Microfabrication." (invited paper)

Symposium on Interfaces and Thin Films, National Academy of Sciences, Washington, D.C., March 23-24, 1987

Birgeneau, R.J., "Liquids, Crystals and Liquid Crystals."

Stanford VLSI Conference, Palo Alto, California, March 23-27, 1987

Selvige, C., and L. Glasser, "Power and Communications Techniques for Physically Isolated Integrated Circuits."

Speech Recognition Workshop, Defense Advanced Research Projects Agency, San Diego, California, March 24-26, 1987

Papers in *Proceedings*:

Glass, J.R., and V.W. Zue, "Acoustic Segmentation and Classification," pp. 38-43.

Seneff, S., "A New Model for the Transduction Stage of the Auditory Periphery," pp. 26-32.

Seneff, S., "Vowel Recognition Based on Line-Formants Derived from an Auditory-Based Spectral Representation," pp. 33-37.

April 1987

Sherwood Theory Conference, San Diego, California, April 6-8, 1987

Abstracts in *Proceedings*:

Bonoli, P., and M. Porkolab, "Analysis of Lower Hybrid RF Stabilization of Sawteeth in the Alcator C Tokamak," paper 1C23.

Coppi, B., "Profile Consistency: Global and Nonlinear Transport," paper 2D1.

Detregiache, P., B. Coppi, and F. Pegoraro, "Theory of $m^{\circ} = 1$ Modes in Regimes of Long Mean Free Path Relevant to Ignition Plasmas," paper 3B4.

- Englade, R., "Profile Consistency and Transport Modelling," paper 3B15.
- Francis, G., A.K. Ram, A. Bers, C.N. Lashmore-Davies, V. Fuchs, and L. Gauthier, "Analytic Models of Ion Cyclotron Absorption," paper 1D1.
- Hsu, C.T., and D.J. Sigmar, "Cross-Species Collisional Viscosity," paper 2C6.
- Pegoraro, F., F. Porcelli, and T.J. Schep, "Internal Kink Modes in the Large Larmor Regime," paper 1D5.
- Porcelli, F., B. Coppi, and S. Migliuolo, "Fishbone Oscillation Bursts Initiated by Fusion Alpha Particles," paper 1C30.
- Ram, A.K., and A. Bers, "Ray Tracing Analysis of the Mode Converted Ion-Bernstein Wave in ICRF Heating," paper 2D27.
- Ramos, J.J., "Internal Kink Modes in Elongated Tokamaks with Flat Rotational Transform," paper 2D2.
- Sugiyama, L.E., "Resolution of Anomalous Thermal Transport Models," paper 3A23.

Presentation to Texas Instruments, Dallas, Texas, April 6, 1987

- Allen, J., "Future Directions in DSP Chips." (invited paper)

IEEE International Conference on Acoustics, Speech and Signal Processing, Dallas, Texas, April 6-9, 1987

Papers in *ICASSP '87*:

- Allen, J., Chairman of panel, "VLSI Signal Processing Architectural Choices."
- Feder, M., A.V. Oppenheim, and E. Weinstein, "Methods for Noise Cancellation Based on the EM Algorithm," pp. 201-204.
- Jeong, H., and B.R. Musicus, "Masks Extraction from Optical Images of VLSI Circuits," pp. 602-605.
- Musicus, B.R., and G.N.S. Prasanna, "A Small 16x16 Cellular Array for Image Processing," paper 33.7.
- Myers, C., "Symbolic Representation and Manipulation of Signals," pp. 2400-2403.
- Peterson, P.M., "Using Linearly-Constrained Adaptive Beamforming to Reduce Interference in Hearing Aids from Competing Talkers in Reverberant Rooms," pp. 2364-2367.
- Peterson, P.M., and J.A. Frisbie, "An Interactive Environment for Signal Processing on a VAX Computer," pp. 1891-1894.
- Rodriguez, J.J., J.S. Lim, and E. Singer, "Adaptive Noise Reduction in Aircraft Communication Systems," pp. 169-172.

Oak Ridge National Laboratory, Energy Division, Oak Ridge, Tennessee, April 16, 1987

- Coppi, B., "Physics and Engineering Issues for Fusion Ignition Experiments."

Conference on Lasers and Electro-Optics, Baltimore, Maryland, April 26 - May 1, 1987

Papers in *CLEO '87*:

Shirasaki, M., H.A. Haus, and D.L. Wong, "A Nonlinear Fiber Interferometer and Logic Gates," pp. 284-286.

15th International Conference on Quantum Electronics, Baltimore, Maryland, April 27 -May 1, 1987

Papers in *IQEC '87*:

John, R.K., J.H. Shapiro, and P. Kumar, "Classical and Quantum Noise Transformations Produced by Self-Phase Modulation."

Lin, W.Z., R.W. Schoenlein, S.D. Brorson, J.G. Fujimoto, and E.P. Ippen, "Femtosecond Carrier Thermalization in GaAs and AlGaAs."

Shapiro, J.H., "Generation, Propagation, and Detection of Squeezed State Light." (invited paper)

IEEE Circuit Analysis and Design Workshop, Destin, Florida, April 28, 1987

Allen, J., Organizer and chairman of the session, "Performance Directed Synthesis."

GEC Hirst Research Center, Wembley, England, April 29, 1987

Melngailis, J., "Focused Ion Beam Fabrication." (invited seminar)

CNET, Grenoble, France, April 30, 1987

Melngailis, J., "Microfabrication par Faisceaux D'ion Focalises." (invited seminar)

May 1987

Seventh APS Topical Conference on Applications of Radio-Frequency Power to Plasmas, Kissimmee, Florida, May 4-6, 1987

Chen, K.I., S.C. Luckhardt, M. Mayberry, and M. Porkolab, "Particle Transport Simulation of Lower-Hybrid Current Drive Experiments on the Versator Tokamak."

Francis, G., A. Bers, and A.K. Ram, "Non-Resonant Mode-Coupling Model of ICRF Heating."

Fuchs, V., C.N. Lashmore-Davies, G. Francis, A.K. Ram, and A. Bers, "Fast-Wave Transmission and Reflection in Ion-Cyclotron Heating."

Luckhardt, S.C., K-I. Chen, R. Kirkwood, M. Porkolab, J. Squire, and Z. Lu, "Initial Operation of Combines ECRH and Lower-Hybrid Current Drive Experiments on the Versator II Tokamak."

Ram, A.K., and A. Bers, "Electron Heating by Mode-Converted Ion-Bernstein Waves in ICRF Heating of Tokamak Plasmas."

NATO Workshop on Emerging Technologies for In Situ Processing, Institute of Scientific Studies at Cargese, Corsica, France, May 4-8, 1987

Melngailis, J., Organizer and co-chairman of the workshop.

Melngailis, J., "Focused Ion Beam Induced Deposition." (invited paper)

Annual Spring Meeting of the Association for Research in Vision and Ophthalmology, Sarasota, Florida, May 4-8, 1987

Abstracts in *ARVO 1987*:

Fujimoto, J.G., C.A. Puliafito, J.M. Krauss, and W.Z. Lin, "Interferometric Laser Exposure Technique for Investigation of Retinal Thermal Damage," p. 114.

Hewlett Packard Internal Design Review Meeting, Berkeley, California, May 5, 1987

Allen, J., Keynote Speaker on Silicon Compilation

113th Meeting of the Acoustical Society of America, Indianapolis, Indiana, May 11-15, 1987

Abstracts in *J. Acoust. Soc. Am.* 81, Suppl. 1 (1987):

Eddington, D.K., "Cochlear Implants: What Are They and What Do They Accomplish?" p. S58.

Fisher, W.M., V.W. Zue, J. Bernstein, and D.S. Pallett, "On Acoustic-Phonetic Data Base," p. S92.

Kline, G.C., and H.S. Colburn, "Predictions for Binaural Masked Detection with Frozen-Noise Maskers," p. S27.

Koehnke, J., and H. S. Colburn, "The Dependence of Binaural Detection and Interaural Time and Intensity in Normal and Impaired Listeners," p. S27.

Reed, C.M., M.H. Power, K.K. Foss, N.I. Durlach, and L.D. Braida, "Development and Testing of Artificial Low-Frequency Speech Codes," p. S54.

CNET/CNRS, Bagneux, France, May 12, 1987

Melngailis, J., "Microfabrication par faisceaux d'ions focalises." (invited seminar)

Thompson CSF, Orsay, France, May 13, 1987

Melngailis, J., "Microfabrication par faisceaux d'ions focalises." (invited seminar)

Bull Research Center, Paris, France, May 14, 1987

Melngailis, J., "Microfabrication par faisceaux d'ions focalises." (invited seminar)

Technical Symposium Southeast on Optics, Electro-Optics and Sensors, SPIE '87, Orlando, Florida, May 17-22, 1987

Papers in *SPIE Proceedings 783*:

Mark, M.B., and J. H. Shapiro, "Multipixel, Multidimensional Laser Radar System Performance," pp.109-122.

International Geoscience and Remote Sensing Symposium and URSI Meeting, University of Michigan, Ann Arbor, Michigan, May 18-21, 1987

Borgeaud, M., J.A. Kong, and R.T. Shin, "Polarimetric Microwave Remote Sensing of Anisotropic Earth Terrain with Strong Fluctuation Theory," URSI Proceedings p. 127.

Lin, F.C., J. A. Kong, and R.T. Shin, "Theoretical Models for Microwave Remote Sensing of Snow-Covered Sea Ice," IGARSS '87, pp. 1121-1125.

Spring Meeting of the American Geophysical Union, Baltimore, Maryland, May 18-22, 1987

Thieman, J.R., J.K. Alexander, and D.H. Staelin, "Modulated Spectral Activity (MSA) in Jovian Radio Emission."

United States / Israel Workshop on VLSI Architecture and Design, Tiberias, Israel, May 23-31, 1987

Allen, J., "Performance-Directed Synthesis."

International Workshop on High-Speed Optical Processes and Optoelectronics Devices Based on Compound Semiconductors, University of Michigan, Ann Arbor, Michigan, May 27-29, 1987

Ippen, E.P., "Femtosecond Dynamics in AlGaAs Materials and Devices."

June 1987

Conference on Passive Microwave Observing from Environmental Satellites, Williamsburg, Virginia, June 1-4, 1987

Gasiewski, A.J., J.W. Barrett, P.G. Bonanni, and D.H. Staelin, "Temperature Sounding and Precipitation Cell Detection Using 118-GHz Passive Radiometric Observations."

Rosenkranz, P., "Recent Developments in Transmittance."

Staelin, D.H., "Surface Emissivity."

Staelin, D.H., "Precipitation and Water Vapor."

Fourth International Symposium on Gyrotron and Free Electron Laser, Chengdu, China, June 1-5, 1987

Bekefi, G., J. Fajans, D.S. Knowles, B. Lax, J.S. Wurtele, K. Xu, and Y.Z. Yin, "Measurements of Linear and Nonlinear Characteristics of a Collective Free Electron Laser."

Bekefi, G., F. Hartemann, D.A. Kirkpatrick, and R.E. Shefer, "Measurements of Beam Brightness from Field Emission Guns for Free Electron Laser Applications."

Picture Coding Symposium, Stockholm, Sweden, June 7-12, 1987

Martinez, D.M., and J.S. Lim, "Restoration and Interpolation of Motion Pictures by Motion Compensation."

IEEE Microwave and Millimeter-Wave Monolithic Circuits Symposium, Las Vegas, Nevada, June 8-9, 1987

Dagli, N., and C.G. Fonstad, "A New Method of Analyzing and Modeling Integrated Optoelectronic Components," pp. 39-41.

Second Haystack Observatory Meeting on Interstellar Matter, Barrett Symposium, Cambridge, Massachusetts, June 8-12, 1987

Burke, B.F., "Alan Barrett and Future Directions in Astronomy."

Burke, B.F., "Introduction of Charles H. Townes."

General Electric Company and Record Company of America Research Briefing, Massachusetts Institute of Technology, Cambridge, Massachusetts, June 10, 1987

Allan, J., "Microwave and Quantum Electronics, and Microelectronics: Outlook on RLE/Lincoln Supported Research."

170th Meeting of the American Astronomical Society, Vancouver, Canada, June 14-18, 1987

Dreher, J.W., C.L. Carilli, and R.A. Perley, "Discovery of the Counter Jet in Cygnus A."

Heflin, M.B., B.F. Burke, E.E. Falco, M.V. Gorenstein, I.I. Shapiro, J.N. Hewitt, A.E.E. Rogers, and C. Lawrence, "VLBI Observations of the Gravitational Lens System 2016+112."

Langston, G.I., and B.F. Burke, "MG 1355+083: Quartet of Double-lobed Radio Sources."

International Astronomical Union Colloquium on Bioastronomy - The Next Step, Balatonfured, Hungary, June 14-20, 1987

Burke, B.F., "Optical Interferometry and the Detection of Evidence of Life."

International Astronomical Union Symposium on Evolution of Large Scale Structures in the Universe, Balatonfured, Hungary, June 14-20, 1987

Burke, B.F., "Gravitational Lenses."

Department of Defence Alpha Particle Workshop, Germantown, Maryland, June 15-16, 1987

Coppi, B., "Plasma Oscillation Bursts and Scattering of Slowed-down MeV Particles."

10th Annual Conference, Rehabilitation Engineering Society of North America San Jose, California, June 21-23, 1987

Durlach, N.I., C. R. Corbett, M.V.C. McConnell, W.M. Rabinowitz, P.M. Peterson, and P.M. Zurek, "Multimicrophone Monoaural Hearing Aids."

Lin Symposium, Massachusetts Institute of Technology, Cambridge, Massachusetts, June 22-24, 1987

Coppi, B., "Physics of Space and Laboratory Plasmas."

Eighth International Conference on Laser Spectroscopy, Are, Sweden, June 22-26, 1987

Papers in *Proceedings*:

Pritchard, D.E., K. Helmerson, V.S. Bagnato, G.P. Lafyatis, and A.G. Martin, "Optical Pumping in Translation Space," pp. 68-72

Gordon Conference on Plasma Physics MHD and Transport, Plymouth, New Hampshire, June 22-26, 1987

Coppi, B., "Profile Consistency in Tokamaks."

14th European Conference on Controlled Fusion and Plasma Heating, Madrid, Spain, June 22-26, 1987

Coppi, B., P. Detregiache, and F. Pegoraro, "Internal Kink Modes in the Large Larmor Radius, Long Mean Free Path Regime."

Pegoraro, F., F. Porcelli, and T.J. Schep, "Kink Modes in the Large Gyroradius Regime."

Conference on Electron Properties of Microstructures, Santa Barbara, California, June 29 - July 2, 1987

Lee, P., "Conductance Fluctuations in Submicron Structures."

Gordon Research Conference on Implantable Auditory Protheses, New London, New Hampshire, June 29-July 3, 1987

Rabinowitz, W.M., "Tactile Aids for the Deaf." (invited presentation)

July 1987

Fifth International Conference on Hot Carriers in Semiconductors, Boston, Massachusetts, July 20-24, 1987

Papers in *Proceedings*:

Schoenlein, R.W., W.Z. Lin, S.D. Brorson, E.P. Ippen, and J.G. Fujimoto, "Femtosecond Hot Carrier Energy Redistribution in GaAs and AlGaAs,"

Shahidi, G.G., D.A. Antoniadis, and H.I. Smith, "Reduction of Hot-Electron Effects in Sub-100 nm Channel Length Si MOSFETs."

United States-Japan Seminar on Quantum Mechanical Aspects of Quantum Electronics, Monterey, California, July 21-24, 1987

Papers in *Proceedings*:

Ippen, E.P., and J.G. Fujimoto, "Femtosecond Studies of Hot Carrier Relaxation in GaAs and AlGaAs," p. 415.

Kumar, P., J.H. Shapiro, M.W. Maeda, S-T. Ho, and M. Madabushi, "Squeezing Via Travelling-Wave Forward Mixing in Atomic Vapors: Comparison with Nondegenerate Theory," p. 451.

Shapiro, J.H., "Open Questions in Closed-Loop Photodetection," p. 628.

Wolff, P.A., "Free Carrier Nonlinear Optics," p. 327.

Japan-United States Transcultural Seminar, Sendai, Japan, July 26-August 1, 1987

Kleppner, D., Plenary Address.

Gordon Research Conference on Nonlinear Optics and Lasers, Brewster Academy, Wolfeboro, New Hampshire, July 27 - August 1, 1987

Ippen, E.P., "Femtosecond Studies of Opto-electronic Materials and Devices."

NASA Global Scale Atmospheric Processes Research Program Review, Columbia, Maryland, July 29, 1987

Gasiewski, A.J., J.W. Barrett, P.G. Bonanni, C.C.L. Kuo, and D.H. Staelin, "High-Spatial-Resolution Passive Microwave Remote-Sensed Spectra Observations Near Fronts: Experimental Results."

Rosenkranz, P.W., A.C. Briancon, and D.H. Staelin, "Impact of High-Spatial-Resolution Passive Remote Sensing Data Upon Numerical Weather Analyses and Predictions: Theoretical Studies."

August 1987

Eleventh International Congress of Phonetic Sciences, Tallinn, Estonia, August 1-7, 1987

Papers in *Proceedings*:

- DiBenedetto, M-G., "On Vowel Height: Acoustic and Perceptual Representation by the Fundamental and the First Formant Frequency," Vol. 5, pp. 198-201.
- Espy-Wilson, C.Y., "A Semivowel Recognition System," Vol. 5, pp. 403-406.
- Hawkins, S., and K.N. Stevens, "Perceptual and Acoustical Analyses of Velar Stop Consonants," Vol. 5, pp. 342-345.
- Lim, J.S., "Speech Enhancement," Vol. 1, pp. 285-291.
- Randolph, M.A., and V.W. Zue, "The Role of Syllable Structure in the Acoustic Realizations of Stops," Vol. 2, pp. 360-363.
- Seneff, S., "Vowel Recognition Based on "Line-Formants" Derived from an Auditory-Based Spectral Representation," Vol. 5, pp. 392-395.
- Shattuck-Hufnagel, S., "Phonological Planning for Speech Production Speech Error Evidence for Word-Based vs. Syllable-Based Structure," Vol. 3, pp. 169-172.
- Stevens, K.N., "Interaction Between Acoustic Sources and Vocal-Tract Configurations for Consonants," Vol. 3, pp. 385-389.
- Stevens, K.N., "Relational Properties as Perceptual Correlates of Phonetic Features," Vol. 4, pp. 352-356.

19th General Assembly of the International Union of Geodesy and Geophysics, Vancouver, British Columbia, Canada, August 9-22, 1987

Gasiewski, A.J., J.W. Barrett, P.G. Bonanni, and D.H. Staelin, "Passive Microwave Imaging of Brain Cells Using the 118-GHZ Oxygen."

Energy Independence Conference on Fusion Energy and Plasma Physics, Rio de Janeiro, Brazil, August 17-21, 1987

Coppi, B., "First Ignition Experiments: Problems and Perspectives."

International Symposium on Signal Processing and Its Applications, Brisbane, Australia, August 24-28, 1987

Papers in *ISSPA '87*:

Griffin, W.D., and J.S. Lim, "A High Quality 8 Kbps Multi-Band Excitation," pp. 531-536.

September 1987

International Symposium on Feasibility of Aneutronic Power, Institute for Advanced Study, Princeton, New Jersey, September 10-11, 1987

Coppi, B., "Ignition Studies of D-He³ Thermal Plasmas and the Second Stability Region."

Ninth International Free Electron Laser Conference, Williamsburg, Virginia, September 14-18, 1987

Ashkenazy, J., and G. Bekefi, "A Novel Permanent Magnet Helical Wiggler."

Bekefi, G., J. Fajans, F. Hartemann, J.S. Wurtele, and K. Xu, "Observation of Wave Profile Modification (Optical Guiding) Induced by the Free Electron Laser Interaction."

Hartemann, F., and K. Xu, "Pulse Compression in a Free Electron Laser Amplifier."

Second CIT-Ignition Design Meeting, Massachusetts Institute of Technology, Cambridge, Massachusetts, September 21, 1987

Coppi, B., "Compact Ignition Experiments: Physics and Design Issues"

Microcircuit Engineering 87, International Conference on Microlithography, Jouy-en-Josas, France, September 22-25, 1987

Papers in *Proceedings*:

Anderson, E.H., D. Kern, and H.I. Smith, "Fabrication by Tri-Level Electron-Beam Lithography of X-Ray Masks with 50nm Linewidths, and Replication by X-Ray Nanolithography," pp. 541-546.

Schattenburg, M.L., I. Tanaka, and H.I. Smith, "Microgap X-Ray Nanolithography," pp. 273-279.

Workshop on Defects and Interfaces in Solids, Columbus, Ohio, September 29 - October 1, 1987

Joannopoulos, J.D., "Grain Boundary in Solids."

October 1987

Princeton Workshop on Algorithms, Architecture and Technology Issues in Models of Concurrent Computation, Princeton, New Jersey, October 1-2, 1987

Allen, J., "Representation Issues for System Synthesis."

IEEE Conference on Computer Design - VLSI in Computers, Rye, New York, October 7-9, 1987

Song, W.S., and B. Musicus, "A Fault-Tolerant Architecture for a Parallel Digital Signal Processing Machine."

38th International Astronautical Federation Congress, Brighton, England, October 10-17, 1987

Burke, B.F., "Detection of Life in Other Planetary Systems."

Optical Society of America Annual Meeting, Rochester, New York, October 18-23, 1987

Fujimoto, J.G., "Applications of Ultrashort Pulse and Measurement Techniques to Laser Medicine."

Workshop on Active Experiments in Space, Kyoto, Japan, October 19-20, 1987

Lee, M.C., K.M. Groves, H.C. Hang, and C.P. Liao, "Combined Operation of Two Ground Transmitters for Enhanced Ionospheric Heating."

Carnegie-Mellon University Seminar, Pittsburgh, Pennsylvania, October 22, 1987

Allen, J., "Performance-Directed Synthesis of Digital VLSI Circuits."

Workshop on Future Trends in EEC Curricula: United States, Brasil, Spain and Portugal, Lisbon, Portugal, October 26-27, 1987

Allen, J., Invited Presentation.

Topical Conference on Compound Semiconductor Growth, Processing, and Devices for the 1990's: Japan/United States Perspectives, Gainesville, Florida, October 26-28, 1987

Melngailis, J., "Focused Ion Beam Processing of Compound Semiconductor."
(invited paper)

Workshop on Chemical Concepts for Ultrasmall Electronic Devices, Army Research Office, Cambridge, Massachusetts, October 28-29, 1987

Smith, H.I., "Fabrication and Performance of Sub-100 nm Electronic Devices."

November 1987

Fall Meeting of the Division of Plasma Physics, American Physical Society, San Diego, California, November 2-7, 1987

Abstracts in *Bull. Am. Phys. Soc.* 39:9 (1987):

Ashkenazy, J., and G. Bekefi, "A Novel Permanent Magnet Helical Wiggler."

Bekefi, G., "Measurements of Wave Profile Modification (Optical Guiding) Induced by the Free Electron Laser Interaction."

Chen, K-I., S.C. Luckhardt, Z.H. Lu, M. Porkolab, and S.C. Sherwood, "Emissivity Profiles of H_{α} During EC Start-up Experiments and Particle Transport Study During Combined EC/LH Current Drive Experiments on the Versator II Tokamak."

Chow, C., A.K. Ram, and A. Bers, "Mode-Conversion and Damping in ICRH at Finite Ion-Betas."

Coppi, B., Maxwell Prize Address, "New and Old Trends in Plasma Physics."

Coppi, B., "Global and Nonlinear Energy Transport."

Coppi, B., and the Ignitor Design Group, "Update on the Ignitor Experiments."

- Detregiache, P., B. Coppi, and F. Pegoraro, "Resistive Kink Modes in Kinetic Plasma Regimes."
- Englade, R., "Ohmic Ignition in a Compact Toroidal Device of Ignitor Type."
- Francis, G., A. Bers, and A.K. Ram, "Mode-Boundary Expansion of Coupled Mode Instabilities in Inhomogeneous Plasmas."
- Fuchs, V., R.A. Cairns, A.K. Ram, A. Bers, and C.N. Lashmore-Davies, "Mode-Conversion and Dissipation of the Fast Alfvén Wave in Ion-Cyclotron Heating."
- Hartemann, F., and G. Bekefi, "Microwave Radiation from a Tunable Circular Free Electron Laser."
- Hartemann, F.V., S.C. Chen, and G. Bekefi, "Microwave Radiation from a Rippled-Bore Magnetron (Electrically Pumped Cross-Field Free Electron Laser)."
- Kirkpatrick, D.A., G. Bekefi, and A.C. DiRienzo, "Experimental Studies of a Submillimeter Wavelength Free Electron Laser."
- Kirkwood, R.K., K-I. Chen, I.H. Hutchinson, and S.C. Luckhardt, "Measurement of Electron Distribution in Versator II Using Electron-Cyclotron Absorption."
- Kupfer, K., A. Bers, A.K. Ram, V. Fuchs, and M.M. Shoucri, "Energy Transport in Lower Hybrid Current Driven Plasmas."
- Lu, Z-H., S.C. Luckhardt, K-I. Chen, D.A. Singleton, and M. Porkolab, "The EC Transmission System for the Versator II Tokamak and Measurements of Power Radiation."
- Luckhardt, S.C., K-I. Chen, R. Kirkwood, Z. Lu, M. Porkolab, J. Squire, and J. Villasenor, "Electron Cyclotron Heating and Lower-Hybrid Current Drive Experiments on Versator II."
- Migliuolo, S., L.E. Sugiyama, and S. Coda, "Ballooning Modes in Collisionless Plasmas with Anisotropic Electrons."
- Porcelli, F., B. Coppi, and S. Migliuolo, "Plasma Oscillations Bursts and Scattering of Intermediate Energy α Particles."
- Pu, Y.K., S. Migliuolo, and B. Coppi, "Collisional Ubiquitous Mode."
- Ram, A.K., and A. Bers, "Analytical Modelling of the Propagation of Ion-Bernstein Waves in ICRF Heated Toroidal Plasmas."
- Squire, J.P., K-I. Chen, R.K. Kirkwood, S.C. Luckhardt, and M. Porkolab, "Hard and Soft X-Ray Measurements During ECRH and LHCD Experiments on the Versator II Tokamak."
- Sugiyama, L.E., "Ignition of Advanced Fuels in Compact Tokamaks."
- Villasenor, J., M. Porkolab, S.C. Luckhardt, and K-I. Chen, "Lower-Hybrid Fast Wave Current Drive Experiments in the Versator II Tokamak."
- Xu, K., and F. Hartemann, "Generation of Short Pulses of Coherent Electromagnetic Radiation in a Free Electron Laser Amplifier."

Speech Processing Symposium, Middletown, New Jersey, November 4-6, 1987

Lim, J.S., "4800 BPS High Quality Speech Coding System."

NEC, Kawasaki, Japan, November 10, 1987

Melngailis, J., "Focused Ion Beam Research at MIT." (invited seminar)

International Conference on Computer-Aided Design, Santa Clara, California, November 12, 1987

Allen, J., Chairman of session on control path synthesis.

NTT/Astugi Laboratories, Astugi, Japan, November 12, 1987

Melngailis, J., "Focused Ion Beam Research at MIT." (invited seminar)

Hitachi Research Center, Kokubunji, Japan, November 13, 1987

Melngailis, J., "Focused Ion Beam Research at MIT." (invited seminar)

Annual Convention of the American Speech-Language-Hearing Association, New Orleans, Louisiana, November 13-16, 1987

Braida, L., D. Bustamante, A. Montgomery, S. Revoile, and R. Uchanski, "Hearing-Aid Processed Speech." (Miniseminar)

Koehnke, J., and H. S. Colburn, "Binaural Detection and Discrimination in Normal-Hearing and Hearing-Impaired Listeners."

Levitt, H., W.M. Rabinowitz, and M. Weiss, "Noise Reduction Techniques." (Miniseminar)

Joint Japan/United States Seminar on Focused Ion Beam Technology and Applications, Osaka, Japan, November 15-20, 1987

Melngailis, J., U.S. chairman of the seminar.

Melngailis, J., T.O. Herndon, M. Shepard, and H. Lezec, "Planar Vias Through Si₃N₄ Fabricated by Focused Ion Beam Implantation."

Ro, J.S., A.D. Dubner, C.V. Thompson, and J. Melngailis, "Ion Induced Deposition of Gold Films."

114th Meeting of the Acoustical Society of America, Miami, Florida, November 16-20, 1987

Glass, J.R., and S. Seneff, "Pulse Synchronous Analysis of Speech Using an Auditory Representation," p. S83.

Grant, K.W., "Evaluating the Articulation Index for the Auditory-Visual Input."

Isabelle, S.K., and H.S. Colburn, "Effects of Target Phase in Narrowband Frozen Noise Detection Data."

Klatt, D.H., "Acoustic Correlates of Breathiness: First Harmonic Amplitude, Turbulence Noise, and Tracheal Coupling."

Koehnke J., and S. Colburn, "Effects of Rowing Level on Binaural Detection and Discrimination On and Off Midline."

Lamel, L.F., "Identification of Stop Consonants from Continuous Speech in Limited Context," p. S80.

Rabinowitz, W.M., and P.M. Peterson, "Directional Processing for Interference Reduction in Hearing Aids."

Reed, C.M., L.A. Delhorne, and N.I. Durlach, "Tactile Reception of Fingerspelling and Sign Language."

Reed, C.M., W.M. Rabinowitz, and N.I. Durlach, "Tactile Speech Reception Using Augmented Tadoma."

Seneff, S., "A Model for Transduction Stage of Auditory Speech Processing," p. S80.

Wilson, T.A., "AGC Behavior of a Recovery Model for Auditory Neuron Firings," p. S118.

Fujitsu Laboratories, Atsugi, Japan, November 30, 1987

Melngailis, J., "Focused Ion Beam Research at MIT." (invited seminar)

Toshiba Laboratories, Kawasaki, Japan, November 30, 1987

Melngailis, J., "Focused Ion Beam Research at MIT." (invited seminar)

Materials Research Society Meeting, Boston, Massachusetts, November 30-December 5, 1987

Papers in *Proceedings*:

Lin, W.Z., R.W. Schoenlein, S.D. Brorson, E.P. Ippen, and J.G. Fujimoto, "Femtosecond Carrier Dynamics in Semiconductors and Metals."

Ro, J.S., A.D. Dubner, C.V. Thompson, and J. Melngailis, "Microstructure of Gold Films Grown by Ion Induced Deposition."

December 1987

Workshop on Femtosecond Physics in Semiconductors, Arizona State University, Tempe, Arizona, December 9-11, 1987

Fujimoto, J.G. "Femtosecond Transient Absorption Saturation Studies of Carrier Relaxation in GaAs."

National Science Foundation Workshop on Physics of Devices, Madras, India, December 10-12, 1987

Allen, J., "Performance Directed Synthesis of VLSI Systems."

Symposium on Speech Communication and Processing, Massachusetts Institute of Technology, Cambridge, Massachusetts, December 14, 1987

Allen, J., Welcome and introduction.

Braida, L.D., "Speech Processing Aids for the Handicapped."

Klatt, D.H., "Speech Synthesis: State of the Art, Current Research at MIT, Future Prospects."

Lim, J.S., "Coding, Enhancement, and Time Scale Modification of Speech."

Stevens, K.N., "Speech Production, Speech Perception, and Linguistic Units."

Zue, V., "Speech Recognition: State of the Art, Current Research at MIT, Future Prospects."

Symposium on Fundamental Limits on Coherent Lidar, Broadway, England, December 15-18, 1987

Shapiro, J.H., "Heterodyne Mixing Efficiency for Coherent Laser Radar." (invited paper)

58th Statistical Mechanics Meeting, Rutgers University, New Brunswick, New Jersey, December 17-18, 1987

Hui, K., "Reentrant Behavior of an Anti-Metamagnet in a Magnetic Field."

Marko, J.F., "Optimized Direct Correlations and Ordering in the Hard Ellipsoid Fluid."

30.2 Journal Articles

30.2.1 Published Journal Articles

Bekefi, G., F. Hartemann, and D.A. Kirkpatrick, "Temporal Evolution of Beam Emittance from a Field Emission Electron Gun," *J. Appl. Phys.* 62 (5):1564 (1987).

Birgeneau, R.J., "Liquids, Crystals, and Liquid Crystals," *Proc. Nat. Acad. Sci.* 84:4689 (1987).

Brown, M.C., "Morphology of Labeled Afferent Fibers in the Guinea Pig Cochlea," *J. Comp. Neurol.* 260:591 (1987).

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Bustamante, D.K., and L.D. Braida, "Principal-Component Amplitude Compression for the Hearing Impaired," *J. Acoust. Soc. Am.* 82 (4):1227 (1987).

Carilli, C.L., and J.H. van Gorkom, "Discovery of Low Redshift, Neutral Hydrogen Absorption in the Radio Spectrum of PKS 2020-370," *Astrophys. J.* 319:683 (1987).

Colavita, M.M., M. Shao, and D.H. Staelin, "Atmospheric Phase Measurements with the Mark III Stellar Interferometer," *Appl. Optics* 26 (19):4106 (1987).

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- Dubner, A.D., G.M. Shedd, H. Lezec, and J. Melngailis, "Ion Beam Induced Deposition of Gold by Focused and Broad Beam Sources," *J. Vac. Sci. Technol. B* 5:1434 (1987).
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- Gomez-Santos, G., and J.D. Joannopoulos, "On the Application of the Spin Wave Theory to the Ground State of XY Quantum Hamiltonians," *Phys. Rev. B* 36 (16):8707 (1987).
- Gould, P.L., G.A. Ruff, P.J. Martin, and D.E. Pritchard, "Preparation of a Single-State Atomic Beam by Optical Pumping and Radiative Deflection," *Phys. Rev. A* 36 (3):1478 (1987).
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30.2.2 Articles Accepted for Publication in Journals

- Ashkenazy, J., and G. Bekefi, "Analysis and Measurements of Permanent Magnet Bifilar Helical Wigglers," *IEEE J. Quantum Electron.*
- Brorson, S.D., "What Is the Confocal Parameter?" *IEEE J. Quantum Electron.*
- Brorson, S.D., and H.A. Haus, "Geometrical Limitations in Grating Pair Pulse Compression," *Appl. Optics.*
- Brorson, S.D., and H.A. Haus, "Diffraction Gratings and Geometrical Optics," *J. Opt. Soc. Am.*
- Coppi, B., "Near-Term Experiments on Fusion Burn Conditions by Neutronless Reactions," *Nucl. Instrum. Methods.*
- Coppi, B., S. Migliuolo, and F. Porcelli, "Macroscopic Plasma Oscillation Bursts (Fishbones) Resulting from High Energy Populations," *Phys. Fluids.*
- Coppi, B., and F. Porcelli, "Plasma Oscillation Bursts and Scattering of Intermediate Energy α Particles," *Fusion Technol.*
- Feder, M., and E. Weinstein, "Parameter Estimation of Superimposed Signals Using the EM Algorithm," *IEEE Trans. ASSP.*

- Glasser, L.A., and C.A. Zukowski, "Continuous Models for Communication Density Constraints on Multiprocessor Performance," *IEEE Trans. (C)*.
- Ho, S-T., P. Kumar, and J.H. Shapiro, "Quantum Theory of Nondegenerate Multiwave Mixing: I. General Formulation," *Phys Rev. A*.
- Kaxiras, E., and J.D. Joannopoulos, "Hydrogenation of Semiconductor Surfaces: Si and Ge (111)," *Phys. Rev. B*.
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- Payne, M.C., M. Needels, and J.D. Joannopoulos, "Symmetry Breaking in the Molecular Dynamics Method for *Ab-Initio* Total Energy Calculations," *Phys. Rev. B*.
- Ro, J.S., A.D. Dubner, C.V. Thompson, and J. Melngailis, "Summary Abstract: Ion Induced Deposition of Gold Films," *J. Vac. Sci. Technol.*
- Rose, C., and T.F. Weiss, "Frequency Dependence of Synchronization of Cochlear Nerve Fibers in the Alligator Lizard: Evidence for a Cochlear Origin of Timing and Non-Timing Neural Pathways," *Hear. Res.*
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30.3 Letters to the Editor

30.3.1 Published Letters

- Atwater, H.A., C.V. Thompson, and H.I. Smith, "Interface-Limited Grain-Boundary Motion During Ion Bombardment," *Phys. Rev. Lett.* 60 (2):112 (1988).
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30.3.2 Letters to the Editor Accepted for Publication

- Coppi, B., "Profile Consistency: Global and Nonlinear Transport," *Physics Lett.*
- Martin, P.J., B.G. Oldaker, H.A. Miklich, and D.E. Pritchard, "Bragg Scattering of Atoms from a Standing Light Wave," *Phys. Rev. Lett.*
- Shaidi, G.G., D.A. Antoniadis, and H.I. Smith, "Electron Velocity Overshoot at Room and Liquid Nitrogen Temperatures in Silicon Inversion Layers," *IEEE (EDL)*.
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30.4 Chapters in Books

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30.5 Reports Published

These reports may be obtained from the Communications Office, 36-412, Research Laboratory of Electronics, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139, at the cost listed. Please include a check made out to RLE and allow six to eight weeks for surface mail. Foreign airmail postage is an additional \$4.00 for each report ordered.

Allen, J., and D. Kleppner, eds., *RLE Progress Report No. 129*. MIT, 1987. No charge.

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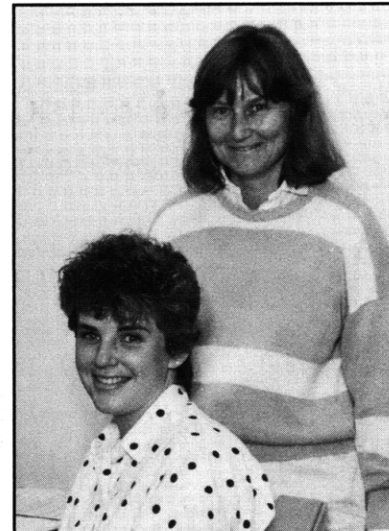
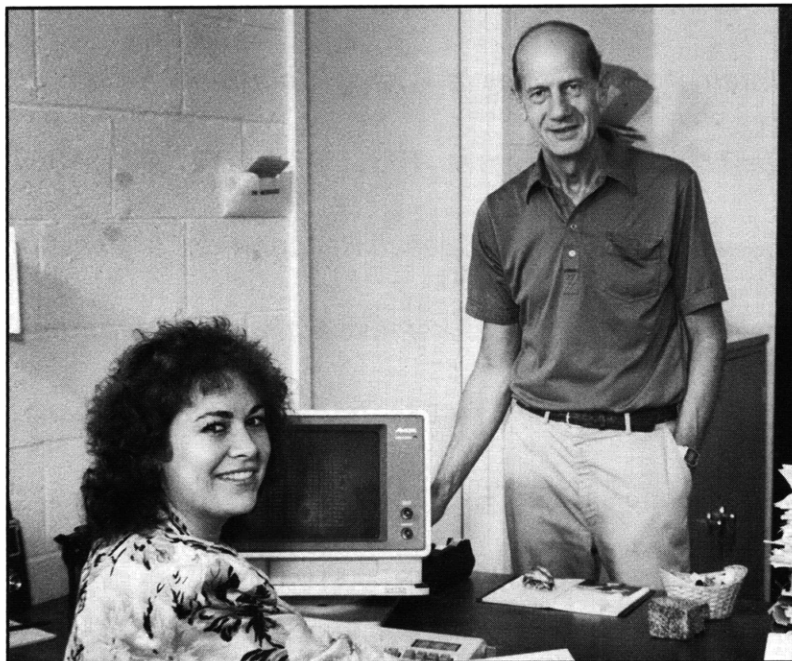
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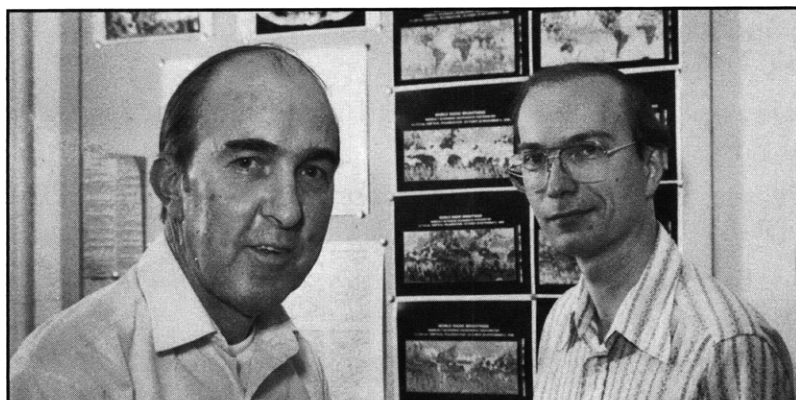
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