

## PUBLICATIONS

APL staff members were authors or coauthors of the following unclassified books and technical articles that were recently published:

**Anderson BJ, Denton RE, and Fuselier SA**

On determining polarization characteristics of ion cyclotron wave magnetic field fluctuations, *J. Geophys. Res.* **101**, 13,195–13,213 (1996).

**Anderson BJ, Erlandson RE, Engebretson MJ, Alford J, and Arnoldy RL**

Source region of 0.2 to 1.0 Hz geomagnetic pulsation bursts, *Geophys. Res. Lett.* **23**, 769–772 (1996).

**Arnoldy RL, Engebretson MJ, Alford JL, Erlandson RE, and Anderson BJ**

Magnetic impulse events and associated Pc 1 bursts at dayside high latitudes, *J. Geophys. Res.* **101**, 7793–7799 (1996).

**Axness TA, Coffman RV, Kopp BA, and O'Haver KW**

Shared aperture technology development, *Johns Hopkins APL Tech. Dig.* **17**(3), 285–294 (1996).

**Beal RC, Kusnierkiewicz DY, MacArthur JL, Monaldo FM, and Oden SF**

A lightweight Spectrasat concept for global ocean wave monitoring, *Proc. IEEE Int. Geoscience and Remote Sensing Symp.*, IGARSS'96, pp. 1143–1145 (1996).

**Beal RC, Thompson DR, Young GS, Shirer HN, and Sikora TD**

Atmospheric signatures in SAR imagery, *Proc. IEEE Int. Geoscience and Remote Sensing Symp.*, IGARSS'96, pp. 896–898 (1996).

**Berl WG**

Chih Kung Jen—A remembrance, *Johns Hopkins APL Tech. Dig.* **17**(3), 330–332 (1996).

**Bolulic RS, Jensen JR, and McKnight TR**

Telecommunications system technologies for the NEAR spacecraft, *Proc. 2nd IAA Int. Conf. on Low-Cost Planetary Missions*, pp. 1–10 (1996).

**Charles HK Jr**

Multichip module design, fabrication, and assembly, *Proc. 1st Int. Conf. and Exhibition on Engineering Microelectronics and Interconnection Technology*, Reston, VA, pp. 239–249 (1996).

Cost versus technology trade-offs for multichip modules, *Proc. Int. Microelectronics Symp.*, Reston, VA, pp. 553–558 (1995).

**Crowley G, Schoendorf J, Roble RG, and Marcos FA**

Cellular structures in the high-latitude thermosphere, *J. Geophys. Res.* **101**, 211–223 (1996).

**Cummer SA, Bell TF, Inan US, and Zanetti LJ**

VLF remote sensing of the auroral electrojet, *J. Geophys. Res.* **101**, 5381–5389 (1996).

**Donohue DJ, Stoyanov BJ, McCally RL, and Farrell RA**

A numerical test of the normal incidence uniaxial model of corneal birefringence, *Cornea* **15**(3), 278–285 (1996).

**Edwards ML, and Cheng S**

Conditionally stable amplifier design using constant mu-contours, *IEEE MTT-S Dig.*, 863–866 (1996).

**Ercol CJ, and Krein SJ**

Thermal design of the Near Earth Asteroid Rendezvous spacecraft, *Proc. 26th Int. Conf. on Environmental Systems* (1996).

**Erlandson RE, and Anderson BJ**

Pc 1 waves in the ionosphere: A statistical study, *J. Geophys. Res.* **101**, 7843–7857 (1996).

**Franson JD**

Coherent splitting of single photons by an ideal beam splitter, *Phys. Rev. A* **53**(6), 3756–3760 (1996).

**Fuselier SA, and Anderson BJ**

Low-energy He<sup>+</sup> and H<sup>+</sup> distributions and proton cyclotron waves in the afternoon equatorial magnetosphere, *J. Geophys. Res.* **101**, 13,255–13,265 (1996).

**Gotwols BL, Aarholt A, Chapman RD, and Sterner RE II**

Optical, radar and in situ measurements of internal wave dispersion, *Proc. IEEE Int. Geoscience and Remote Sensing Symp.*, IGARSS'96, pp. 1736–1738 (1996).

**Hall MR, and Henry S (Golden Monkey Software)**

Using hierarchies of macro cells to linearize search costs for real-time route planning, *Proc. FLAIRS-96*, pp. 107–113 (1996).

**Hyer SA, Johnston JJ, and Roe CL**

Integration of the Evolved Seasparrow Missile into ships of the NATO Seasparrow consortium navies, *Johns Hopkins APL Tech. Dig.* **17**(3), 314–324 (1996).

**Jensen JP, and Raney RK**

Multi-mission radar altimeter: Concept and performance, *Proc. IEEE Int. Geoscience and Remote Sensing Symp.*, IGARSS'96, pp. 2279–2281 (1996).

**Kan JR, Deehr CS, Lyu LH, and Newell PT**

Ionospheric signatures of patchy-intermittent reconnection at dayside magnetopause, *J. Geophys. Res.* **101**, 10,939–10,945 (1996).

**Kistenmacher TJ, Ecelberger SA, and Stoner BR (Kobe Steel USA, Inc.)**

Assessing polar and azimuthal correlations for an oriented mosaic of (001) diamond crystallinities on (001) silicon, *Diamond and Related Mater.* **4**, 1289–1295 (1995).

**Kistenmacher TJ, Wickenden DK, Hawley ME (Los Alamos Nat. Laboratory), and Leavitt RP (ARL)**

Real and reciprocal space mapping of the mosaic dispersion in self-nucleated Al<sub>x</sub>Ga<sub>1-x</sub>N thin films on (00.1) sapphire, *Appl. Phys. Lett.* **67**(25), 3771–3773 (1995).

**Kumar A, and Rust DM**

Helicity conservation in expanding magnetized plasmas: Flux ropes in the solar wind, in *Solar Drivers of Interplanetary and Terrestrial Disturbances*, ASP Conf. Series 95 (1996).

**Lombardo JS, Mihalek E (Naval Air Systems Command), and Osborne SR**

Collaborative virtual prototyping, *Johns Hopkins APL Tech. Dig.* **17**(3), 295–304 (1996).

**Lui ATY**

Current disruption in the Earth's magnetosphere: Observations and models, *J. Geophys. Res.* **101**, 13,067–13,088 (1996).

**Magruder SF, and Bateman KL**

Investigation of a pingwise normalization algorithm for processing sonar signals, *U.S. Navy J. Underwater Acoust.* **46**(1), 305–324 (1996).

**Maier-Tyler LL**

Awards for publications and research and development, *Johns Hopkins APL Tech. Dig.* **17**(3), 327–329 (1996).

- Manthorpe WHJ Jr**  
The emerging joint system of systems: A systems engineering challenge and opportunity for APL, *Johns Hopkins APL Tech. Dig.* 17(3), 305–313 (1996).
- Mathews DL, Ruohoniemi JM, Dudeney JR, Farrugia CF, Lanzerotti LJ, and Friis-Christensen E**  
Conjugate cusp-region ULF pulsations responses to the solar wind event of 23 May 1989, *J. Geophys. Res.* 101, 7829–7841 (1996).
- Mauk BH, Gary SA, Kane M, Keath EP, Krimigis SM, and Armstrong TP**  
Hot plasma parameters of Jupiter's inner magnetosphere, *J. Geophys. Res.* 101, 7685–7695 (1996).
- McNutt RL Jr**  
Correlated variations in the solar neutrino flux and the solar wind and the solar neutrino problem, *Science* 270, 1635–1638 (1996).
- Monaldo FM**  
Comparison of wave parameters measured from the SIR-C on-board processor with WAM predictions in the southern ocean, *Proc. IEEE Int. Geoscience and Remote Sensing Symp., IGARSS'96*, pp. 1149–1151 (1996).
- Newell PT, Feldstein YI, Galperin YI, and Meng CI**  
Morphology of nightside precipitation, *J. Geophys. Res.* 101, 10,737–10,748 (1996).
- Pace DK**  
Key validation issues for high performance computing, *High Performance Computing '96: Proc. 1996 Simulation Multiconference*, Society for Computer Simulation, San Diego, CA, pp. 366–371 (1996).  
Verification, validation, and accreditation issues for models and simulations used in the acquisition process, *Proc. ASNE 1996 Modeling, Simulation, and Virtual Prototyping Conf.*, American Society of Naval Engineers, Alexandria, VA, pp. 289–309 (1996).
- Paranicas CP, Cheng AF, and Mauk BH**  
Charged particle phase space densities in the magnetospheres of Uranus and Neptune, *J. Geophys. Res.* 101, 10,681–10,693 (1996).
- Phillips TE, Barger CB, and Benson RC**  
Thermogravimetric analysis of condensed materials on a quartz crystal microbalance, *J. Vac. Sci. Technol.* 13(6), 2726–2731 (1995).
- Porter DL, Glenn SM, Dobson EB, and Crowley MF**  
Extension and validation of a Gulf Stream GEOSAT synthetic geoid into the Sargasso Sea, *J. Atmos. Oceanic Technol.* 13(2), 514–531 (1996).
- Porter DL, and Shih HH**  
Investigations of temperature effects on NOAA's next generation water level measurement system, *J. Atmos. Oceanic Technol.* 13(3), 714–725 (1996).
- Porter DL, and Thompson DR**  
Estimation of thermocline depths from SAR imagery and a two layer density model, *Proc. IEEE Int. Geoscience and Remote Sensing Symp., IGARSS'96*, pp. 1152–1154 (1996).
- Raney RK**  
A quasi-axiomatic foundation for synthetic aperture radar, *Proc. Norwegian Soc. for Image Processing and Pattern Recognition, NOBIM'96*, pp. 6–10 (1996).  
Altimetry for global ice sheet monitoring, *Proc. Norwegian Soc. for Image Processing and Pattern Recognition, NOBIM'96*, pp. 1–5 (1996).
- From coherence to confusion: A conservative SAR view, Chap. 3, in *Modern Radio Science*, Oxford University Press, New York (1996).
- Radar fundamentals: Technical perspective, Chap. 2, in *Manual of Remote Sensing, 3rd Ed.*, F Henderson and A Lewis (eds.), American Society of Photogrammetry and Remote Sensing (1996).
- Romeiser R, and Thompson DR**  
On the detection of spatially varying current fields at the ocean surface by along-track interferometric synthetic aperture radar, *Proc. IEEE Int. Geoscience and Remote Sensing Symp., IGARSS'96*, pp. 981–983 (1996).
- Romenesko BM**  
Ball grid array and flip chip technologies: Their histories and prospects, *ISHM Int. J. Microcircuits Electron. Packaging*, 19(1), 64–74 (1996).
- Romick GJ**  
Aeronomy, in *Encyclopedia of Science and Technology*, 8th Ed., McGraw-Hill (1996).
- Sadowsky J**  
Investigation of signal characteristics using the continuous wavelet transform, *Johns Hopkins APL Tech. Dig.* 17(3), 258–269 (1996).
- Schurman IW**  
Reverberation rejection with a dual-line towed array, *IEEE J. Oceanic Eng.* 21(2), 193–204 (1996).
- Schuster PR, Miragliotta JA, Thomas ME, and Rust DM**  
Development of optical filters based on photorefractive materials, *Johns Hopkins APL Tech. Dig.* 17(3), 270–278 (1996).
- Sibeck DG, Greenwald RA, Bristow WA, and Korotova GI**  
Concerning possible effects of ionospheric conductivity upon the occurrence patterns of impulsive events in high-latitude ground magnetograms, *J. Geophys. Res.* 101, 13,407–13,412 (1996).
- Sibeck DG, and Korotova GI**  
Occurrence patterns for transient magnetic field signatures at high latitudes, *J. Geophys. Res.* 101, 13,413–13,428 (1996).
- Sikora TD, Thompson DR, Young GS, and Winstead NS**  
Evidence of a land breeze in an ERS-1 SAR image of the New Jersey coastline, *Proc. IEEE Int. Geoscience and Remote Sensing Symp., IGARSS '96*, pp. 893–895 (1996).
- Sommerer JC, and Ott E (Univ. of MD)**  
Intermingled basins of attraction: Uncomputability in a simple physical system, *Phys. Lett. A* 214, 243–251 (1996).
- Sommerer JC, Venkataramani SC (Univ. of MD), and Antonsen TM (Univ. of MD)**  
Characterization of on-off intermittent time series, *Phys. Lett. A* 207, 173–179 (1995).
- Strobel DF, Zhu X, Summers ME, and Stevens MH**  
On the vertical thermal structure of Pluto's atmosphere, *Icarus* 120, 266–289 (1996).
- Williams DJ**  
Global energy flow in the magnetosphere-ionosphere system, *J. Geomag. Geoelectr.* 47, 1147–1160 (1995).
- Wing S, Newell PT, and Onsager TG**  
Modeling the entry of magnetosheath electrons into the dayside ionosphere, *J. Geophys. Res.* 101, 13,155–13,167 (1996).

## PRESENTATIONS

APL staff members were among those who gave the following unclassified presentations:

### Anderson BJ

Proton cyclotron waves: Causes, consequences, and utility, *Gordon Research Conf. on Solar Terrestrial Physics*, Henniker, NH (17 Jun 1996).

Structures and dynamics in critical regions: Beyond morphology to predictive science, *JHU/APL/NASA Solar Connections Roadmap Mtg.*, JHU/APL, Laurel, MD (10–12 Apr 1996).

### Appleby JF, Krimigis SM, Hoffman EJ, Reynolds EL, Gold RE, Le BQ, Bokulic RS, Edwards ML, Jenkins RE, Cameron GE, Fountain GH, and Lew AL

New initiatives, *Jet Propulsion Laboratory*, Pasadena, CA (21–22 Mar 1996).

### Appleby JF, Paxton LJ, and Reynolds EL

FireSat phase A study, *NASA's ESSP Program*, Langley, VA (31 Jan 1996).

### Beal RC, Kusnierkiewicz DY, MacArthur JL, Monaldo FM, and Oden SF

A lightweight Spectrasat concept for global ocean wave monitoring, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).

### Beal RC, Thompson DR, Young GS, Shirer HN, and Sikora TD

Atmospheric signatures in SAR imagery, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).

### Charles HK Jr

Cost versus technology trade-offs for multichip modules ISHM—*The Microelectronics Soc.*, Los Angeles, CA (21–23 Oct 1995).

Multichip module design, fabrication, and assembly, *1st Int. Conf. & Exhibition on Engineering Microelectronics & Interconnection Technol.*, Reston, VA (12–26 Feb 1996).

### Christens-Barry WA, Meyer RA, Guarnieri M (JHMI), and Carson BS (JHMI)

Ho:YAG laser technique for removal of ventricular shunt occlusions in situ, *American Soc. for Laser Medicine and Surgery Annual Mtg.*, Lake Buena Vista, FL (15–17 Apr 1996).

### Christens-Barry WA, Partin AW (JHMI), and Epstein JI (JHMI)

Quantitative analysis of visual cues and structural components underlying Gleason grading of prostate tissue, *American Urological Assn. Annual Mtg.*, Orlando, FL (4–9 May 1996).

### Cole TD, Boies MT, Reiter RA, El-Dinary AS, and Culpepper C

Near Earth Asteroid Rendezvous (NEAR) laser rangefinder, *AEROSENSE '96 Symp.*, *Laser Radar Appl. Conf.*, Orlando, FL (10 Apr 1996).

### Coughlin TB

NEAR project: The first launch in the Discovery program, *NASA Program/Project Management Initiative*, Wallops Island, VA (25 Jun 1996).

### Coury BG

Intelligent user interfaces for ship system automation, *Submarine Technol. Symp.*, JHU/APL, Laurel, MD (16 May 1996).

### Cutchis PN, Antosh L, and North R

Quantitative comparison of spinal cord stimulation electrode configurations, *Int. Neuromodulation Soc. Third Int. Congress, American Neuromodulation Soc. First Scientific Mtg.*, Orlando, FL (6–10 Mar 1996).

### Cutchis PN, North RB, Sieracki JM, Schrickel RL, Mueller BA, Farrokhi F, and Fowler KR

Patient-interactive neurological stimulation system, *Int. Neuromodulation Soc. Third Int. Congress, American Neuromodulation Soc. First Scientific Mtg.*, Orlando, FL (6–10 Mar 1996).

### Donohue DJ, and Kuttler JR

Propagation modeling over terrain by coordinate transformation of the parabolic wave equation, *APL/RPM Wave Scattering Seminar*, JHU/APL, Laurel, MD (6 Feb 1996).

### Edwards ML, and Cheng S

Conditionally stable amplifier design using constant mu-contours, *MTT-S Int. Microwave Symp./Exhibition*, San Francisco, CA (17–21 Jun 1996).

### Erlandson RE, Gary JB, Zanetti LJ, Ericksson A, Eliasson L, Boehm MH, and Blomberg L

Freja observations of EMIC waves and transverse oxygen ion acceleration on auroral field lines, *Freja Science Team Mtg.*, Paris, France (Jan 1996).

### Farquhar RW

NEAR mission summary, *Int. Space Development Conf.*, New York, NY (26 May 1996).

### Franson JD

Splitting of single photons by an ordinary beam splitter, *Quantum Electronics and Laser Science Conf.*, Anaheim, CA (2–7 Jun 1996).

### Franson JD, and Jacobs BC

Quantum cryptography without optical fibers, *Quantum Electronics and Laser Science Conf.*, Anaheim, CA (2–7 Jun 1996).

### Gilreath HE

Ammonia: A non-polluting renewable fuel for spark-ignition engines, *Joint Mechanical Engineering/Aerospace Engineering Seminar*, Virginia Polytechnic Institute and State University, Blacksburg, VA (4 Mar 1996).

### Gotwols BL, Aarholt A, Chapman RD, and Sterner RE II

Optical radar and in situ measurements of internal wave dispersion, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).

### Gussow M

Composite industry view of application of technology to littoral warfare, *64th Military Operations Research Society Symp.*, Fort Leavenworth, KS (18–20 Jun 1996).

### Keller MR, and Gotwols BL

Comparison of experimental and theoretical ocean wave-number spectra for gravity-capillary and capillary waves, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).

### Krimigis SM

The NEAR mission to asteroid Eros; The new solar system after thirty-five years of spacecraft exploration; and Fermi acceleration at planetary bowshocks and interplanetary shocks, *Israel Institute of Advanced Studies, Distinguished Lectures in Geophysics and Planetary Science*, Tel Aviv University, Israel (27 May–5 Jun 1996).

### Ku HC, and Sibeck DG

The internal structure of flux transfer events, *American Geophysical Society Mtg.*, Baltimore, MD (22 May 1996).

### Kues HA

Safety considerations for millimeter-wave technologies, *Hewlett-Packard Seminar Series*, Palo Alto, CA (26 Apr 1996).

- Kues HA, Osiander R, Patel JL** (College of Notre Dame of MD), and **Monahan JC** (FDA)  
Distribution measurements for 60 GHz sources, *Annual Mtg. of the Bioelectromagnets Soc.*, Victoria, B.C., Canada (11 Jun 1996).
- Kusnierkiewicz DY, Carlsson PU, and Temkin DK**  
Considerations for the procurement and application of hybrid DC/DC converters, *34th Aerospace Science Mtg. and Exhibit*, Reno, NV (15–18 Jan 1996).
- Maryak JL, and Chin DC**  
A cautionary note for using iterate averaging in stochastic approximation, *Analysis to Support Public Sector Decision Making*, Washington, DC (5–8 May 1996).
- Maryak JL, and Hunter LW**  
Automated system monitoring and diagnosis via singular valve decomposition, *Joint Research Conf. on Statistics in Quality, Industry, and Technology*, Washington, DC (29–31 May 1996).
- Maryak JL, Spall JC, and Asher MS**  
A neural network approach to nondestructive evaluation of complex structures with application to highway bridges, *Int. Conf. on Neural Networks*, Washington, DC (3–6 Jun 1996).
- Maryak JL, Spall JC, and Heydon BD**  
Use of the Kalman filter for inference in state-space models with unknown noise distributions, *13th World Congress of Int. Federation of Automatic Control*, San Francisco, CA (30 Jun–4 Jul 1996).
- Mitchell DG**  
Evolution, origins, and structure, *JHU/APL/NASA Solar Connections Roadmap Mtg.*, JHU/APL, Laurel, MD (10–12 Apr 1996).  
Magnetospheric stereography mission, *JHU/APL/NASA Solar Connections Roadmap Mtg.*, JHU/APL, Laurel, MD (10–12 Apr 1996).  
Planetary magnetospheric imaging, *Planetary Roadmap Workshop*, California Institute of Technology, Pasadena, CA (5 Mar 1996).  
Visualization of ion dynamics, *JHU/APL/NASA Solar Connections Roadmap Mtg.*, JHU/APL, Laurel, MD (10–12 Apr 1996).
- Monaldo FM**  
Comparison of wave parameters measured from the SIR-C on-board processor with WAM predictions in the southern ocean, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).
- Murphy GA**  
An automated search for moonlets orbiting about asteroid Eros, *SPIE Aerospace/Defense Sensing and Controls Conf., Signal and Data Processing of Small Targets 1996*, Orlando, FL (10 Apr 1996).
- Newell PT, Meng CI, and Lyons KM**  
Do auroral arcs occur when no one is looking? *3rd Int. Conf. on Substorms*, Versailles, France (13–17 May 1996).
- Norton JR**  
Brief history of the development of ultra-precise oscillators for ground and space applications, *IEEE Int. Frequency Control Symp.*, Honolulu, HI (5 Jun 1996).
- Ohtani S, Angelopoulos V, Nakamura M, Singer H, Takahashi K, Kokubun S, Rostoker G, Zanetti LJ, Gary JB, Potemra TA, Lui ATY, and Williams DJ**  
Coordinated data analysis of boundary waves in the morning sector, *Nat. Science Foundation GEM Workshop*, Snowmass, CO (24–28 Jun 1996).
- Ohtani S, Elphinstone RD, Troshichev OA, Blomberg LG, and Yamauchi M**  
Response of dayside auroral and electromagnetic process to IMF variations, *Nat. Science Foundation GEM Workshop*, Snowmass, CO (24–28 Jun 1996).
- Ohtani S, Higuchi T, Takahashi K, Lui ATY, and Spence HE**  
Magnetic fluctuations associated with tail current disruption, *3rd Int. Conf. on Substorms*, Versailles, France (13–17 May 1996).
- Ohtani S, Lui ATY, and Takahashi K**  
Energetic particle signatures observed before an onset of tail current disruption, *Nat. Science Foundation GEM Workshop*, Snowmass, CO (24–28 Jun 1996).
- Porter DL, and Thompson DR**  
Estimation of thermocline depths from SAR imagery and a two layer density model, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).
- Potember RS**  
Networks of cultured cells on self-assembled monolayers, *American Chemical Soc. Nat. Mtg.*, New Orleans, LA (24–28 Mar 1996).
- Raney RK**  
Photons and paradigms: SAR comes of age, *Norwegian Soc. for Image Processing and Pattern Recognition, NOBIM '96*, Oslo, Norway (10–11 Jun 1996).
- Robbins CM**  
U.S. Navy surface combatant requirements for military operations other than war (MOOTW), *64th Military Operations Research Soc. Symp.*, Fort Leavenworth, KS (18–20 Jun 1996).
- Romenesko BM**  
Joining technologies in electronics packaging, *Colloquium at Edison Welding Inst.*, Columbus, OH (16 May 1996).
- Rust DM**  
Flare Genesis Experiment—Physics from balloon-borne platforms, *Antarctic Experimenters Mtg.*, Arlington, VA (1 Apr 1996).  
Global magnetic patterns, *Solar Cycle Workshop*, Tucson, AZ (28 Mar 1996).  
Magnetic helicity and its relationship to the origins of solar eruptions, *American Physical Soc. Conf. on Magnetic Fields in Astrophysics*, Indianapolis, IN (5 May 1996).  
Magnetic helicity, MHD kink instabilities, and reconnection in the corona, *Conf. on Observations of Magnetic Reconnection in the Solar Atmosphere*, Bath, England (22 Mar 1996).  
What to do with vector magnetic field measurements, *Workshop on Measurements and Analysis of the 3-D Solar Magnetic Field*, Huntsville, AL (9 Apr 1996).
- Rust DM, Murphy GA, Strohbahn K, Keil SL, and Keller CU**  
The Flare Genesis Experiment, *American Astronomical Soc. 188th Mtg.*, Madison, WI (9–13 Jun 1996).  
The Flare Genesis Experiment, *Workshop on Measurements and Analyses of the 3-D Solar Magnetic Field*, Huntsville, AL (11 Apr 1996).
- Rust DM, and Zanetti LJ**  
Heliospheric links explorer, *JHU/APL/NASA Solar Connections Roadmap Mtg.*, JHU/APL (10–12 Apr 1996).
- Sadowsky J**  
Multi-divisional graduate education in sensory engineering: The science of virtual reality, *21st Century Computing: Physical Basis to Classroom Applications*, Yorktown, NY (12–13 Apr 1996).
- Sibeck DG**  
Bursty merging at the dayside magnetopause, *IKI*, Moscow, Russia (12 Mar 1996).
- Sikora TD, Thompson DR, Young GS, and Winstead NS**  
Evidence of a land breeze in an ERS-1 SAR image of the New Jersey coastline, *Int. Geoscience and Remote Sensing Symp.*, Lincoln, NE (28–31 May 1996).
- Spall JC**  
Introduction to simultaneous perturbation stochastic approximation, *INFORMS Spring 1996 Nat. Mtg.*, Washington, DC (6 May 1996).

- On the use of simultaneous perturbation stochastic approximation for real-time control of unmodelable systems, *INFORMS Spring 1996 Nat. Mtg.*, Washington, DC (7 May 1996).
- Stochastic optimization via the simultaneous perturbation algorithm, *Biostatistics Seminar at JHU School of Hygiene*, Baltimore, MD (17 Apr 1996).
- Stochastic optimization via the simultaneous perturbation algorithm, *Heavy Ion Fusion Seminar*, Livermore, CA (8 Jul 1996).
- Stochastic version of second-order optimization using only function measurements, *13th World Congress of Int. Federation of Automatic Control*, San Francisco, CA (30 Jun–5 Jul 1996).
- Spall JC, Chin DC, and Smith RH**  
A system-wide approach to adaptive traffic control, *Neural Network Applications in Highway and Vehicle Engineering Conf.*, Ashburn, VA (10–11 Apr 1996).
- Spall JC, and Cristion JA**  
Model-free control of general processes, *Joint Research Conf. on Statistics in Quality, Industry, and Technology*, Gaithersburg, MD (29–31 May 1996).
- Model-free control of nonlinear stochastic systems in discrete time, *Proc. Int. Conf. on Neural Networks*, Washington, DC (3–6 Jun 1996).
- Spall JC, and Sadegh P (The Technical Univ. of Denmark)**  
Optimal sensor placement, *Test Technology Symp. '96, Visions of Future Conflict—Test Technology Drivers*, JHU/APL, Laurel, MD (4–6 Jun 1996).
- Optimal sensor placement for complex systems, *Joint Research Conf. on Statistics in Quality, Industry, and Technology*, Gaithersburg, MD (29–31 May 1996).
- Suter JJ**  
Special power supplies and batteries, *ARL Microelectronics Research Collaboration Workshop*, Ft. Monmouth, NJ (19 Jun 1996).
- Suter JJ, Zucker PA, and Line AI**  
Development of a small gravity gradiometer for the detection of buried objects, *SPIE: Detection and Remediation Technology for Mines and Mine-like Targets*, Orlando, FL (11 Apr 1996).
- Taylor JC, Erlandson RE, and Swaminathan PK**  
DSMC analysis of H<sub>2</sub> gas venting to space, *31st AIAA Thermospheric Conf.*, New Orleans, LA (17–20 Jun 1996).
- Tossman BE**  
International collaborations in space science and technology, *Nitze School of Advanced Int. Studies*, Washington, DC (16 Apr 1996).
- Zanetti LJ**  
Spatio-temporal verification of a polar-orbit satellite early warning system, *NOAA SEC Workshop on the Evaluation of Space Weather Forecasts*, Boulder, CO (19–21 Jun 1996).
- Zanetti LJ, Kappenman J, and Feero W**  
Ionospheric currents from Freja and predicted geomagnetic induced current, *AMEREM '96 Int. Conf. on the World of Electromagnetics*, Albuquerque, NM (27–31 May 1996)
- The following papers were presented at the 2nd IAA International Conference on Low-Cost Planetary Missions at JHU/APL, Laurel, MD (16–19 Apr 1996):
- Bokulic RS, Jensen JR, and McKnight TR**  
Telecommunications system technologies for the NEAR spacecraft.
- Cheng AF, and Vernon SR**  
Compact penetrators for sample collection and rock chipping.
- Cole TD, Cheng AF, Zuber MT, and Smith D**  
The laser rangefinder on the Near Earth Asteroid Rendezvous spacecraft.
- Crawford LJ, Coughlin TB, and Ebert WL**  
Cost estimation and modeling for space missions at JHU/APL.
- Evans LG, Starr R, Trombka JI, Bruckner J, Bailey SH, Goldsten JO, and McNutt RL Jr**  
Performance of the gamma-ray detector system for the NEAR mission and application to future missions.
- Farquhar RW, Cheng AF, Coughlin TB, Gold RE, and Santo AG**  
NEAR mission status and future plans.
- Goldsten JO, McNutt RL, Gold RE, Gary SA, Fiore E, Schneider SE, Hayes JR, and Trombka JI**  
The X-ray/gamma-ray spectrometer on the Near Earth Asteroid Rendezvous mission.
- Hawkins SE III**  
Overview of the multi-spectral imager on the NEAR spacecraft.
- Hayes JR, Ballard BW, Boldt JD, and Schneider SE**  
NEAR instrument software development.
- Hersman C, Boldt J, Eisenreich P, Oden S, and Temkin D**  
Modular design of data processing hardware for spacecraft instruments.
- Le BQ**  
Lightweight laser rangefinder packaging design.
- Le BQ, Nhan E, Lew AL, Maurer R, Clatterbaugh GV, and Lohr D**  
Miniaturized low-cost design of the Freja magnetometer signal processor using COB technology.
- Lee SC, and Santo AG**  
Near Earth Asteroid Rendezvous spacecraft safing design.
- Lohr D, Anderson BJ, Zanetti LJ, Acuna MH, and Scheifele J**  
Near Earth Asteroid Rendezvous magnetometer investigation.
- McEntire RW, Cheng AF, Murchie SL, Keath EP, Managadze GG, and Rosenbauer HR**  
Instrumentation for measuring the elemental and isotopic surface composition of small bodies and planetary moons.
- McNutt RL Jr, Mitchell DG, Keath EP, Paschalidis NP, Gold RE, and McEntire RW**  
A compact particle detector for low-energy particle measurements.
- McNutt RL Jr, Reynolds EL, Bokulic RS, Gold RE, Fraeman ME, Paschalidis NP, Williams BD, Willey CE, and Dakermanji G**  
An integrated spacecraft approach to a solar probe mission.
- Moussy Y, and Wingate C**  
Thermal feasibility study of a \$4 million student-built satellite.
- Noreen G, Kinman P, and Bokulic RS**  
Detection of very weak transmission from deep space.
- Paschalidis N, Stamatopoulos N, Karadamoglou K, Sarris ET, Keath EP, McNutt RL Jr, Mitchell DG, McEntire RW, Jaskulek SE, Schlemm CE II, Tossman BE, and Krimigis SM**  
Electronics miniaturization of spacecraft instruments and systems.
- Peacock K, Warren JW, and Darlington EH**  
The NEAR infrared spectrograph.
- Rust DM, Gold RE, Zanetti LJ, Crooker NU, Golub L, Hundhausen AJ, Lanzerotti LJ, Lazarus AJ, Sheehafer N, and Zwickl RD**  
Heliospheric Links Explorer (Helix).

**Strohbehn K, Darlington EH, Le BQ, Schwartz P, Hersman CB, and Peacock K**  
Miniature scientific CCD camera.

**van der Ha JC, Marshall MH, and Landshof JA**  
Cost-effective mission operations.

**Zanetti LJ, Gold RE, Bythrow PF, Chiu MC, and Rust DM**  
Low-cost delivery of space weather products.

The following papers were presented at the American Geophysical Union Spring Meeting, Baltimore, MD (20–24 May 1996):

**Anderson BJ, Paschalidis NP, Decker RB, and Sarris ET**  
Onset of nonadiabatic particle motion in the near-Earth magnetotail.

**Anderson DE, Yee JH, Morrison MD, Paxton LJ, Carbary JF, Meng CI, and Romick GI**  
Troposphere–stratosphere ozone/aerosol retrieval from satellite remote sensing of the UV-visible spectrum at the Earth's limb: Problems and potential.

**Baker KB, Rodger AS, and Lu G**  
HF-radar observations of the dayside rate of magnetic merging: A GEM boundary layer campaign study.

**Berdichevsky D, Boardsen S, Williams DJ, McEntire RW, Kokubun S, Yamamoto T, and Lepping RP**  
Periods of upstream field-aligned (up to 0.5 MeV) ions in the Earth foreshock region.

**Blomberg LG, Marklund GT, Lindqvist PA, Yamauchi M, Lundin R, Ohtani S, Zanetti LJ, and Stasiewicz K**  
The dayside cusp electric field: Relation to solar-wind–magnetosphere–ionosphere coupling.

**Bristow WA, Greenwald RA, and Villain JP**  
On the seasonal dependence of medium-scale atmospheric gravity waves in the upper atmosphere at high latitudes.

**Chase CJ, and Roelof EC**  
Video visualization of energetic neutral atom imaging from low and high altitude spacecraft.

**Christon SP, Gloeckler G, Eastman TE, McEntire RW, Roelof EC, Lui ATY, Williams DJ, Frank LA, Paterson WR, Kokubun S, Matsumoto H, Kojima H, Mukai T, Saito Y, and Yamamoto T**  
Average energetic ion composition variations associated with substorm activity from EPIC/STICS on Geotail.

**Crowley G, Fesen CG, Roble RG, and Richmond AD**  
Validation of the NCAR TIEGCM for solar minimum equinox conditions.

**Decker RB**  
Low energy ions at CIRs in the outer heliosphere.

**Eastman TE, Christon SP, Gloeckler G, Frank LA, Paterson WR, Kokubun S, Matsumoto H, Kojima H, Mulai T, Saito Y, Yamamoto T, Williams DJ, Lui ATY, McEntire RW, and Roelof EC**  
EPIC/Geotail ion composition for differing states of energetic proton anisotropy in the Earth's magnetotail.

**Erlandson RE, and Mursula K**  
Simultaneous ground–Viking satellite observations of structured pc 1 pulsations.

**Fasel G, and Sibeck DG**  
Concerning foreshock pressure variations.

**Finkelstein JL, Weigand PJ, Giannini JA, and Kilgus CC**  
Marine topography measurements with the Navy Geosat follow-on (GFO) satellite.

**Ganguli G, Palmadesso PJ, Fedder JA, and Lui ATY**  
Fermi acceleration in the magnetotail: Implications on explosive enhancement of cross-tail current in late substorm growth phase.

**Gary JB, and Zanetti LJ**  
Low frequency magnetic fields associated with field-aligned currents.

**Giannini JA, and Kilgus CC**  
A fuzzy logic technique for correcting ionospheric models with GPS data.

**Goebel L, Doering JP, Paxton LJ, and Morrison D**  
Determining atomic oxygen concentrations in the lower thermosphere from photo-electron spectra II.

**Grason G, Harris N, Lloyd SA, Kupperman DG, Suther LL, DeMajistre R, and Anderson DE**  
Data visualization for the ASHOE/MAESA dataset: Testing photochemical steady state radiative transfer and zero-dimensional chemical kinetic models.

**Greenwald RA**  
The role of ground-based measurements in future space physics programs.

**Kane M, Ecker RB, Mauk BH, McNutt RL, and Krimigis SM**  
The solar wind velocity in corotating interaction regions and in the outer heliosphere using Voyager 1 low energy charged particle anisotropies.

**Ku HC, and Sibeck DG**  
The internal structure of flux transfer events produced by bursty merging at a single X-line.

**Kumar A, and Rust DM**  
The role of magnetic helicity conservation in solar wind heating.

**Kusaka H, Iijima T, Ohtani S, Potemra TA, and Zanetti LJ**  
Force-balanced states of the near-Earth magnetosphere inferred from AMPTE/CCE magnetic field measurements.

**Lui ATY**  
Link between local and global processes in substorms.

**Lui ATY, Williams DJ, Roelof EC, McEntire RW, and Mitchell DG**  
First composition measurements of energetic neutral atoms.

**Lyatsky W, and Sibeck DG**  
The role of surface waves in relaxation of the magnetosphere after SI or impulsive reconnection.

**MacLennan CG, Lanzerotti LJ, Armstrong TP, Roelof EC, Gold RE, and Decker RB**  
Low energy charged particles in the high latitude heliosphere.

**Mauk BH, Lui ATY, Christon SP, and Baker DN**  
Orbiting Mercury.

**McEntire RW, Williams DJ, Lui ATY, Christon SP, Eastman TE, Frank LA, Paterson WR, Kokubun S, Matsumoto H, Kojima H, Mukai T, Yamamoto T, and Saito Y**  
Observations of energetic ion flux regimes in the Earth's magnetotail with the Geotail/EPIC instrument.

**McNutt RL Jr**  
Exploring the heliospheric frontiers: Solar probe and interstellar probe.

**McNutt RL Jr, Lyon J, Goodrich CC, and Wiltberger M**  
Simulations of the global heliosphere.

**Meier RR, Nicholas AC, Roelof EC, and Picone JM**  
Global EUV imaging of the plasmasphere: New visualization and interpretation techniques.

- Mitchell DG, Chase CJ, Mauk BH, Roelof EC, and Williams DJ**  
The use of energetic neutral atom imaging as a general space physics measurement diagnostic for global structure and dynamics of gas-plasma interactions.
- Murphy GA, Rust DM, Strohhahn K, Keil SL, and Keller CU**  
The Flare Genesis Experiment.
- Newell PT, Meng CI, and Lyons KM**  
Do auroral arcs occur when no one is looking?
- Ohtani S, Lui ATY, and Takahashi K**  
Explosive enhancement in tail current intensity before the onset of current disruption.
- Phan TD, Anderson BJ, and Fuselier SA**  
Dependence of plasma depletion on dynamic pressure and magnetic shear: Implications for reconnection.
- Polidan RS, Meyers SC, and Mauk RY**  
Spartan LITE and Spartan 400: Two new three-axis stabilized spacecraft concepts.
- Porter DL, Pao HP, and Thompson DR**  
Continental shelf parameters inferred from SAR internal wave observations.
- Potemra TA, Korotova G, and Blomberg L**  
Ionospheric transmission of ULF waves determined from Viking and ground-based measurements.
- Roelof EC, MacLennan CG, Lanzerotti LJ, and Goldstein BE**  
Ratio of solar wind iron abundances in the south and north polar high-speed streams measured 1994-1995 by Ulysses: HI-SCALE and SWOOPS.
- Roelof EC, and Simnett GM**  
Low-energy charged particles as tracers of the global configuration of the EMF.
- Ruohoniemi JM, and Greenwald RA**  
Correlative analysis of extended SuperDARN HF radar mapping of high-latitude convection.
- Rust DM**  
Mission for stereoscopic imaging of coronal mass ejections.
- Sanchez ER, Kelly JD, Ruohoniemi JM, and Meng CI**  
Plasma sheet fragmentation during active periods.
- Seidel R, Krupp N, Woch J, Keppler E, Hawkins SE III, Lanzerotti LJ, and Dougherty MK**  
Energetic ion and electron beams in the duskside Jovian magnetosphere: Ulysses EPAC and HI-SCALE results.
- Sibeck DG, Phan TD, Nakamura M, and Green JL**  
Correlative geotail and wind measurements: Skimming the magnetopause.
- Sibeck DG, Richardson JD, and Belcher JW**  
Tracking intermediate and long-period wind structures through the heliosphere.
- Sofko GJ, McWilliams K, Greenwald RA, and Bristow WA**  
Dayside region 0 and region 1 field-aligned-current closure near noon.
- Sotirelis T, Newell PT, and Meng CI**  
The shape of the open-closed boundary in the polar cap as determined from observations of precipitating particles by up to four DMSP satellites.
- Takahashi K, Anderson BJ, Ohtani S, and Reeves GD**  
Shell splitting effect associated with ion injections.
- Tinsely BA, Rohrbaugh RP, Ishimoto M, Yee JH, Romick GJ, Morgan F, Torr MR, and Torr DG**  
Observations of the O<sub>2</sub> atmospheric band system in the dayglow and aurora.
- Vassiliadis J, Valdivia A, Sorirelis T, Tsyganenko NA, Sharma AS, and Klimas A**  
Online specification of geomagnetic indices and magnetospheric configuration.
- Wing S, and Sibeck DG**  
A statistical study of the entry of interplanetary magnetic Z-component into the magnetosphere.
- Yee JH, Crowley G, and Roble RG**  
Effects of planetary scale waves on mesospheric nightglow.
- Zanetti LJ, Gary JB, and Anderson BJ**  
Fluctuation magnetic field measurements: A simple auroral current zone detector.
- Zheng S, Zhu X, Bittner M, Eckermann S, and Hirota I**  
Characteristic scales of gravity waves in the middle atmosphere derived from the empirical decomposition method.
- Zhu X, Swaminathan PK, Yee JH, Strobel DF, and Anderson D**  
A globally balanced two-dimensional middle atmosphere model.
- The following papers were presented at the SuperDARN Meeting, Ellicott City, MD (23-25 May 1996):
- Andre D, McKibben M, and Baker KB**  
SuperDARN angle-of-arrival measurements.
- Baker KB, and Barnes R**  
RADOPS/2000.
- Bristow WA**  
SuperDARN observations of thermospheric gravity waves.
- Greenwald RA**  
The SuperDARN role within cluster.
- Greenwald RA, Ruohoniemi JM, Bristow WA, Sofko GJ, and Villain JP**  
Mesoscale dayside convection vortices and their relation to substorm phase.
- Kustov AV, Sofko GJ, Feldstein YI, Gromova LA, Levitin AE, and Ruohoniemi JM**  
Dayside plasma convection: SuperDARN/IZMEM model comparison for IMF  $B_z < 0$  and  $B_z > 0$ .
- McWilliams K, Sofko G, Danskin D, Greenwald RA, and Bristow WA**  
Dayside field aligned current regions seen by superDARN.
- Newell PT**  
Three possible collaborations between SuperDARN and DMSP.
- Prikryl P, Greenwald RA, Sofko GJ, Villain JP, and Ziesolleck CWS**  
Observations of solar-wind-driven field line resonances and ionospheric flows in the cusp/cleft.
- Sofko GJ, McWilliams K, Greenwald RA, and Bristow WA**  
Dayside convection vortices and their FACs: Implications for magnetospheric current systems.