

## PUBLICATIONS

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

**Ali Z, Ringkamp M (JHMI), Hartke TV (JHMI), Chien HF (JHMI), Flavahan NA (JHMI), Campbell JN (JHMI), and Meyer RA**

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Project update: Applied research on remotely queried embedded microsensors, in *Proc. SPIE Smart Structures and Materials 1999, Nondestructive Evaluation Techniques for Aging Infrastructure and Manufacturing*, Newport Beach, CA (1–5 Mar 1999).

**Bostrom CO**

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**Bostrom CO, and McEntire RW**

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## PRESENTATIONS

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

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The systems of systems challenge for test and evaluation, 1999 ONDCP Int. Technology Symp., Washington, DC (8–10 Mar 1999).
- Arnold AG, and Kujawa WF  
Test and evaluation of complex systems of systems, *TECOM Test Technology Symp.*, Ellicott City, MD (16 Mar 1999).
- Beal RC, Thompson DR, and Monaldo FM  
High resolution coastal wind fields using wide-swath SAR, *IEEE Geoscience and Remote Sensing Symp.*, IGARSS'99, Hamburg, Germany (28 Jun–2 Jul 1999).
- Bevan MG, Kotlarski KA, Wickerson JE, Jablonski DG, Saleh W, and Chen MH  
Occupant position sensor compatibility with 50th percentile male hybrid III dummy, *SAE Int. Congress & Exposition*, Detroit, MI (2 Mar 1999).
- Bevan MG  
Occupant sensor compatibility with crash test dummies, *SAE Government Industry Mtg.*, Washington, DC (28 Apr 1999).
- Biermann PJ, Gause LW (NRL), Krantz DG (MTS Systems Corp.), and Belk JH (Boeing Co.)  
Early demonstration of remotely queried microsensors, *SPIE Smart Structures and Materials 1999*, Newport Beach, CA (1–5 Mar 1999).
- Biermann PJ, Krantz DG (MTS Systems Corp.), Belk JH (Boeing Co.), Dubow J (Univ. of Utah), Gause LW (NRL), Harjan R (Univ. of MN), Mantell SC (Univ. of MN), Polla DL (Univ. of MN), and Troyk P (IIT)  
Project update: Applied research on remotely queried embedded microsensors, *SPIE Smart Structures and Materials 1999*, Newport Beach, CA (1–5 Mar 1999).
- Busch D, Grant CJ, and Krill JA  
Testing of the Cooperative Engagement Capability with Joint systems, 1999 *Natl. Fire Control Symp.*, Colorado Springs, CO (2–5 Aug 1999).
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Design and development of the TIMED spacecraft solar array, *34th Intersociety Energy Conversion Engineering Conf.*, Vancouver, British Columbia, Canada (2–5 Aug 1999).

- Campbell JN (JHMI), Ali Z (JHMI), Ringkamp M (JHMI), Hartke TV (JHMI), Chien HF (JHMI), Flavahan NA (JHMI), and Meyer RA**  
Biological rationale for distal therapies for pain, *Annual Mtg. of the Peripheral Nerve Society*, La Jolla, CA (Jul 1999).
- Cheng AF**  
The NEAR mission: Overview and status, *Asteroids, Comets, Meteors*, Cornell University, Ithaca, NY (Jul 1999).
- Cipriano J (Naval Sea Systems Command), and Krill JA**  
Engineering and test of a naval battle force, *Defense Systems and Equipment Int. Conf.*, Surrey/Chertsey, UK (14–17 Sep 1999).
- Dellinger WF**  
Attitude estimation and control for the TIMED spacecraft, *14th World Congress of Int. Federation of Automatic Control (IFAC)*, Beijing, P.R., China, (5–9 Jul 1999).
- Dogra VK, Taylor JC, Swaminathan PK, Erlandson RE, and Meng C-I**  
Time-dependent modeling of gas cloud expansion in ionosphere with radiation-transport and gas dynamics coupling, *30th AIAA Plasma Dynamics and Lasers Conf.*, Norfolk, VA (28 Jun–1 Jul 1999).
- Edwards RT**  
Acoustic transient classification with a template correlation processor, *2nd European Workshop on Neuromorphic Systems*, University of Stirling, Scotland (3–6 Sep 1999).
- Ercol CJ**  
Determination of optimum thermal phase angles at Mercury perihelion for an orbiting spacecraft, *29th Int. Conf. on Environmental Systems*, Denver, CO (12–15 Jul 1999).
- Erlandson RE, and Ukhorsky AJ**  
EMIC waves and geomagnetic storms, *GEM Conf.*, Snowmass, CO (21–25 Jun 1999).
- Fogel SA, Poland DD, and Weiskopf FB**  
Trident launcher subsystem integrated diagnostics demonstration, *Natl. Defense Industrial Assoc. 2nd Annual Conf.*, San Diego, CA (21–23 Sep 1999).
- Gold RE**  
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- Guo Y, and Strikwerda TE**  
Autonomous solar navigation-concept and orbit determination, *1999 Int. Symp. on Space Communications and Navigation Technologies*, Pasadena, CA (21–23 Sep 1999).
- Hill S**  
Effect of imprecisely known nuisance parameters on estimates of primary parameters, *1999 Program of The Joint Statistical Mtgs.*, Baltimore, MD (8–12 Aug 1999).
- Hohman DS, Murdock MM, Westerfield EE, Hattox TM, and Kusterer TL**  
GPS roadside integrated precision positioning system, *ION GPS '99*, Nashville, TN (14–17 Sep 1999).
- Humm DC, Ogorzalek BS, Elko MJ, Morrison D, and Paxton LJ**  
Optical calibration of the Global Ultraviolet Imager (GUVI), *1999 SPIE Symp. on Optical Science, Engineering, and Instrumentation*, Denver, CO (18–23 Jul 1999).
- Jenkins AL, Murray GM, and Uy OM**  
Polymer-based lanthanide luminescent sensors for detection of the soman hydrolysis product in water, *Pittsburgh Conf. on Analytical Chemistry*, Orlando, FL (7–12 Mar 1999).
- Jenkins JE**  
Near Earth Asteroid Rendezvous spacecraft power system flight performance, *34th Intersociety Energy Conversion Conf.*, Vancouver, Canada (1–5 Aug 1999).
- Krill JA, Grant C, and Busch D (PEO/TSC)**  
Testing of the Cooperative Engagement Capability with Joint systems, *1999 Natl. Fire Control Symp.*, Colorado Springs, CO (3–5 Aug 1999).
- Krill JA, and Cipriano J (Naval Sea Systems Command)**  
Interoperability and net-centricity, *Defense Systems and Equipment Intl. Conf.*, Surrey/Chertsey, UK (14–17 Sep 1999).
- Levy LJ, Pue AJ, Thompson T, and Pullen SP (Stanford Univ.)**  
GPS risk assessment for civil aviation, *ION GPS '99 Conf.*, Nashville, TN (17 Sep 1999).
- Libershal DM**  
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- Lui ATY**  
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- Mauk BH**  
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- McCally RL, and Bargerion CB**  
Corneal damage thresholds for exposures to Tm:YAG laser radiation at 2.02  $\mu\text{m}$ , *2nd Workshop on Infrared Lasers and Millimeter Waves*, Cloudcroft, NM (11–13 Aug 1999).
- McNutt RL Jr**  
The military and aerospace applications of programmable devices and technologies, *Space Exploration Beyond 2020*, JHU/APL, Laurel, MD (28 Sep 1999).
- McNutt RL Jr**  
The solar wind/VLISM interaction problem: Charge-exchange formulations and the MHD/HD limit, *Progress in Cosmic Gas Dynamics Conf.*, Moscow, Russia (13–17 Sep 1999).
- Mehoke DS, and Wienhold PD**  
Practical constraints in using high thermal conductivity composite materials in spacecraft applications, *34th Intersociety Energy Conversion Engineering Conf.*, Vancouver, British Columbia, Canada (2–5 Aug 1999).
- Meyer, RA**  
Myelinated nociceptors in primate, *Satellite Mtg. of the 9th World Congress on Pain*, Prague, Czech Republic (Aug 1999).
- Meyer RA, Peng YB (JHMI), Ringkamp M (JHMI), and Campbell JN (JHMI)**  
Cutaneous branching structure of physiologically identified nociceptors, *Annual Mtg. of the Peripheral Nerve Society*, La Jolla, CA (Jul 1999).
- Monaldo FM**  
Estimation of high-resolution wind speed from a spaceborne SAR, *Alaska SAR Demonstration Training*, Anchorage/Juneau, AK (7–11 Sep 1999).
- Paxton LJ, Christensen AB, Humm DC, Ogorzalek BS, Pardoe CT, Morrison D, Weiss MB, Crain W, Lew PH, Mabry DJ, Goldsten JO, Gary SA, Persons DF, Harold MJ, Alvarez EB, Ercol CJ, Strickland DJ, and Meng C-I**  
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- Raney RK, and Porter DL**  
WITTEX: A novel three-satellite radar altimeter concept, *Radar Altimetry Group*, NOAA, Silver Spring, MD (16 Jul 1999).
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**Rottier JR**  
Coastal ocean classification: A management planning tool, *Coastal Zone 99 Conf., San Diego, CA* (27 Jul 1999).

**Spall JC**  
The information matrix: Statistical applications and efficient computation in general problems, *George Mason University CSI/Statistics Colloquium Series* (24 Sep 1999).

**Stadter PA, Devereux WS, Denissen RA, Duven DJ, Asher MS, Weidow DA, and Folta DC**  
Interspacecraft communications architectures for formation flying, *1999 Space Technology Conf. and Expo., Albuquerque, NM* (28–30 Sep 1999).

**Terry D, Swaminathan PK, Erlandson RE, Nance RP, Hunter L, and Mayr M**  
Auxiliary sensor data collections on Navy ground tests, *16th Annual BMDO Lethality Conf., Columbus, OH* (13–15 Sep 1999).

**Thompson DR**  
Extracting high-resolution wind fields from SAR imagery, *Seminar at Applied Physics Laboratory, University of Washington, Seattle, WA* (19 Aug 1999).

**Waltrup PJ**  
Upper bounds of the flight speed of hydrocarbon fueled scramjet powered vehicles, *XIV ISABE Intl. Symp. on Airbreathing Engines, Florence, Italy* (5–10 Sep 1999).

**White ME**  
Hypersonic technology for DoD applications—Past, present and future—an APL perspective, *Air Force SAB Hypersonics Planning Committee, Dayton, Ohio* (30 Aug 1999).

**White ME, Biemer SM, and Gealy GS**  
Time critical strike system engineering technical approach, *Integrated Product Team Mtg. with ONR, Arlington, VA* (16 Aug 1999).

**Wienhold PD, and Wozniak JJ**  
The compressed natural gas integrated storage system, *SAMPE-ACCS-DOE Advanced Composites Conf., Detroit, MI* (1999).

**Yee J-H, Cameron GE, and Kusnierkiewicz DY**  
An overview of TIMED, *SPIE 44th Annual Mtg. and Exhibition, Denver, CO* (18–23 Jul 1999).

The following papers were presented at the Int. Union of Geodesy and Geophysics XXII General Assembly, Birmingham, UK (18–30 Jul 1999).

**Anderson BJ, and Erlandson RE**  
Occurrence of electromagnetic ion cyclotron waves in association with geomagnetic storms.

**Anderson BJ, Russell CT, Cattell CA, and Fuselier SA**  
Electromagnetic waves from 0.1 to 4 Hz observed by Polar.

**Christon SP, Gloeckler G, Lui ATY, McEntire RW, Roelof EC, Williams DJ, Eastman TE, and Kokubun S**  
Geotail spacecraft observations of energetic ion spectral and compositional variations near substorm onset.

**Erlandson RE, Ukhorsky AJ, Giles B, and Slavin JA**  
Observational test of ion cyclotron wave propagation in the vicinity of the Bi-ion hybrid resonance frequency.

**Hamilton DC, Hill ME, Gloeckler G, Decker RB, and Krimigis SM**  
Solar cycle effects on the spectrum of ACR oxygen.

**Ho GC, Decker RB, Gold RE, Krimigis SM, Mason GM, Dwyer JR, and Mazur JE**  
Energy spectra and abundances variations observed by ACE during the August 1998 solar energetic particle event.

**Kropotkin AP, Trubachev OO, and Lui ATY**  
Nonlinear dynamics of the equilibrium loss in the geomagnetotail plasma system based on a “combined” plasma kinetic effect.

**Lu G, Tsyganenko NA, Lui ATY, Singer HJ, Nagai T, and Kokubun S**  
Modeling of time-evolving magnetic fields during substorms.

**Lui ATY**  
Measuring theories for triggering substorm expansion with observational constraints.

**Morrison D, Carbary JF, Romick GJ, Paxton LJ, and Meng C-I**  
Distributions of polar mesospheric clouds observed by a middle ultraviolet imager.

**Posch JL, Erickson KN, Engebretson MJ, Lui ATY, Arnoldy RL, and Fukunishi H**  
Substorm timing using Pi1 pulsations from the high latitude magnetometer arrays.

**Romick GJ, Yee J-H, Morgan MF, and Morrison D**  
Optical observations of topside molecular nitrogen ions in the polar cap: Altitude profiles of the vibrational and rotational distributions.

**Sotirelis T, and Newell PT**  
Boundary-oriented electron precipitation model.

**Sotirelis T, Newell PT, Skura JP, and Meng C-I**  
Monitoring the open-closed boundary using particle precipitation observations.

**Tagirov V, Arinin V, Meng C-I, Liou K, Sibeck DG, Lui ATY, Frank LA, Morgan D, and Parks G**  
Ground and spacecraft optical observations of substorms.

The following papers were presented at the 1999 Program of the Joint Statistical Meetings, Baltimore, MD (8–12 Aug 1999).

**Hill S**  
Effect of imprecisely known nuisance parameters on estimates of primary parameters.

**Maryak J, and Chin D**  
Efficient global optimization using SPSA.

**Nelson JB**  
Disc

**Spall JC**  
Adaptive stochastic optimization by the simultaneous perturbation method.

**Stark D, Spall JC, and Hill S**  
Some preliminary theoretical comparisons of several stochastic optimization approaches.

The following papers were presented at the Magnetospheres of the Outer Planets Mtg., Paris, France (8–14 Aug 1999).

**Krimigis SM**  
Saturn’s magnetosphere: Current status and outstanding problems

**Lagg AA, Paranicas CP, Cheng AF, Choo TH, Williams DJ, and Armstrong TP**  
Ion phase space densities in the magnetosphere of Jupiter between 9 and 15 RJ.

**Mauk BH, Krimigis SM, Mitchell DG, and Roelof EC**  
Energetic neutral atom imaging of Jupiter’s inner magnetosphere using the Cassini MIMI instrument.

**McNutt RL Jr**

Titan ionospheric plasma as viewed by Voyager 1, *Magnetospheres of the Outer Planets*, Paris, France (8–13 Aug 1999).

**McNutt RL Jr, Lyon J, and Goodrich CC**

Simulations of outer planet magnetospheres during the Voyager flybys.

The following papers were presented at the AAS/AIAA Astrodynamics Specialist Conf., Girdwood, AK (16–19 Aug 1999).

**Antreasian P, Helfrich C, Miller J, Owen W, Williams B, Yeomans D, Giorgini J, Scheeres D, Dunham DW, Farquhar RW, McAdams JV, Santo AG, and Heyler GA**

Preliminary planning for NEAR's low-altitude operations at 433 Eros.

**Guo Y**

Aladdin's phasing and mission orbit design.

**Haley D**

Precision attitude estimation with star trackers: Experience, error models and their interpretation.

**Helfrich C, Miller J, Antreasian P, Carranza E, Williams B, Dunham DW, Farquhar RW, and McAdams JV**

Near Earth Asteroid Rendezvous (NEAR) revised orbit phase trajectory design.

The following papers were presented at the 13th Annual American Institute of Aeronautics and Astronautics/Utah State University (AIAA/USU) Conf. on Small Satellites, Logan, UT (23–26 Aug 1999).

**Baer GE, Eichstedt JE, and Ossing DA**

Solar terrestrial relations observatory (STEREO) mission and concept of operations.

**Mosher LE, and Cardin JM**

A low power approach to small satellite propulsion.

**Raney RK, Fountain GH, Gold RE, Lew AL, and Porter DL**

WITTEX: A constellation of three small satellite radar altimeters.

**Stadter PA**

Discrete event command and control for formation flying of distributed small spacecraft systems.

The following papers were presented at the 1999 Fall Simulation Interoperability Workshop, Orlando, FL (12–17 Sep 1999).

**Lancelotta MP (JHMI), Sheth R (JHMI), Meyer RA, and Campbell JN (JHMI)**

The type of nerve injury influences the severity and duration of hyperalgesia in rats, *9th World Congress on Pain*, Vienna, Austria (1999).

**Li Y (JHMI), Dorsi M (JHMI), Meyer RA, and Belzberg AJ (JHMI)**

An experimental neuropathic pain model: selective sensory degeneration resulting in mechanical hyperalgesia, *9th World Congress on Pain*, Vienna, Austria (1999).

**Lutz RR, and Coolahan JE**

Developmental concepts for digital distributed product descriptions.

**Lutz RR, Salisbury M, and Bidwell G**

A demonstration of C2I system-to-simulation interoperability. The NSS/GCCS-M Federation.

**Magerl W (Johannes-Gutenberg Univ., Mainz, Germany), Fuchs PN (JHMI), Meyer RA, and Treede R.-D (Johannes-Gutenberg Univ., Mainz, Germany)**

Secondary hyperalgesia to punctuate stimuli in humans is mediated by capsaicin-insensitive A-fiber nociceptors, *9th World Congress on Pain*, Vienna, Austria (1999).

**Meyer RA**

Neural models of secondary hyperalgesia, *Workshop of 9th World Congress on Pain*, Vienna, Austria (Aug 1999).

**Pace DK**

Development and documentation of a simulation conceptual model.

**Pace DK**

Use of subject matter experts (SMEs) in simulation evaluation.

**Pollack AF, and Baker JP**

Federation decomposition: HLA metrics.

## COLLOQUIA

The following topics were recently presented at the weekly APL Colloquium:

**5 November 1999**

Fractional Quantum Hall Effect, JJ Quinn, University of Tennessee

**12 November 1999**

Advanced Photon Source, DE Moncton, Argonne National Laboratory

**19 November 1999**

Space Weather, R Howard, Naval Research Laboratory

**3 December 1999**

Mars Global Surveyor, M Acuña, NASA

**10 December 1999**

Blue Creek: An Ancient Maya City, TH Guderjan, St. Mary's University

**17 December 1999**

Laser Radar in Ballistic Missile Defense, IN Bankman, APL