PUBLICATIONS

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

Bailey LE, Roberts JC, and Jones DL (George Washington Univ.)
Optimal design parameters for thermal and mechanical performance of a metal/composite joint, *Proc. American Society for Composites 10th Technical Conf.*, Technomic Publishing, Lancaster, PA, pp. 428–437 (1995).

Bao G (JHU), Jiang W (JHU), and Roberts JC
On the bending and buckling of orthotropic rectangular plates, *Proc. American Society for Composites 10th Technical Conf.*, Technomic Publishing, Lancaster, PA, pp. 97–106 (1995).

Bythrow PF
Air Force programs at APL, *Johns Hopkins APL Tech. Dig.* **17**(1), 117–126 (1996).

Cranmer JH, Sanders JT, Lesho JC, and Uy OM
Contamination control for the MSX: An overview, *Johns Hopkins APL Tech. Dig.* **17**(1), 88–101 (1996).

Huebschman RK
The MSX spacecraft system design, *Johns Hopkins APL Tech. Dig.* **17**(1), 41–48 (1996).

Krein JA, and Mehoke DS
The MSX thermal design, *Johns Hopkins APL Tech. Dig.* **17**(1), 49–58 (1996).

Nordeen RD, Barnes VB, Good AC, and Harvey RJ
The MSX flight operations system, *Johns Hopkins APL Tech. Dig.* **17**(1), 102–116 (1996).

Pace DK
A modest V & V proposal, *Phalanx, The Bulletin of Military Operations Research* **28**(4), 16–17 (Dec 1995).

Panneton PE, and Jenkins JE
The MSX spacecraft power subsystem, *Johns Hopkins APL Tech. Dig.* **17**(1), 77–87 (1996).

Pardoe CT
Keeping the MSX on track, *Johns Hopkins APL Tech. Dig.* **17**(1), 35–40 (1996).

Paxton LJ, Meng CI, Anderson DE, and Romick GJ
MSX—A multiuse space experiment, *Johns Hopkins APL Tech. Dig.* **17**(1), 19–34 (1996).

Peterson MR
Midcourse Space Experiment: Guest Editor's introduction, *Johns Hopkins APL Tech. Dig.* **17**(1), 2–4 (1996).

Roberts JC, and Carkhuff BG
Transient and steady state temperatures in hybrid high/low thermal conductivity composites, *Proc. American Society for Composites 10th Technical Conf.*, Technomic Publishing, Lancaster, PA, pp. 513–522 (1995).

Roberts JC, and Wienhold PD
Design, analysis, and fabrication of a graphite/epoxy electronic enclosure flanged aperture with supporting EMI test data, *J. Composite Materials* **29**(14), 1834–1849 (1995).

Skullney WE, Kreitz HM, Harold MJ, Vernon SR, Betenbaugh TM, Hartka TJ, Persons DF, and Schaefer ED
Structural design of the MSX spacecraft, *Johns Hopkins APL Tech. Dig.* **17**(1), 59–76 (1996).

Spall JC
The Kantorovich inequality for error analysis of the Kalman filter with unknown noise distributions, *Automatica* **31**(10), 1513–1517 (1995).

Thomas ME, Cotter TM, and Constantikes KT
Infrared properties of polycrystalline magnesium fluoride, *Proc. 6th DoD Electromagnetic Windows Symp.*, U.S. Army Space and Strategic Defense Command, Redstone Arsenal, Huntsville, AL, pp. 464–471 (1995).

Tropf WJ
Modeling and estimating window material properties, *Proc. 6th DoD Electromagnetic Windows Symp.*, U.S. Army Space and Strategic Defense Command, Redstone Arsenal, Huntsville, AL, pp. 334–340 (1995).

Tropf WJ, and Thomas ME
Measurements and estimation techniques for high-temperature radiative properties of solids, *American Society of Mechanical Engineers, Technical Publishing Pamphlet Paper, 95-WA/JHT-31*, ASME Technical Publishing, New York, pp. 1–10 (1995).

PRESENTATIONS

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

Bargeron CB, Phillips TE, and Benson RC
Electrical conductance of condensed electronic package gases, *March Meeting of the American Physical Society*, San Jose, CA (20–24 Mar 1995).

Thermogravimetric analysis of water–methanol mixtures, *Solar System Ices Conf.*, Toulouse, France (27–30 Mar 1995).

Gopalan P, and Srinivasan R
Localized corrosion in cathodically polarized Ad09 steel in aqueous sodium chloride, *188th Meeting of the Electrochemical Society*, Chicago, IL (8–13 Oct 1995).

Lee HS, Cowan DO (JHU), and Fainchtein R
Characterization of K-(BEDT-TTF)$_2$CU[N(CN)$_2$], *March Meeting of the American Physical Society*, San Jose, CA (20–24 Mar 1995).

Maurer RH, Bargeron CB, Nhan E, and Phillips TE
Reliability of low-power laser diodes, *SPIE: Photonics for Space Environments III*, Orlando, FL (17–21 Apr 1995).

Osiander R, Kues HA, Patel JL (JHMI), and Murphy JC
Microwave absorption in melanotic eye tissues, *BEMS: 17th Annual Meeting*, Boston, MA (18–22 Jun 1995).

Pineda FJ
A neural network inspired by fractal block coding, *Neural Networks Study Group*, AT&T Bell Labs, Murray Hill, NJ (28 Sep 1995).

Generalization in TD(λ), *Neural Networks for Physicists No. 5*, Minneapolis, MN (25 Aug 1995).

The nature of TD(λ), *Machine Learning Group*, AT&T Bell Labs, Murray Hill, NJ (28 Sep 1995).

Spall JC
Small-sample data analysis, *Meeting of the Maryland Chapter of the America Statistical Association*, Columbia, MD (27 Oct 1995).

Spicer JWM, Champion JL (JHU), Osiander R, and Spicer JB (JHU)
Comparison of time-resolved thermographic and shearographic NDE methods for graphite–epoxy honeycomb composite, *1995 JANNAF Propulsion Subcommittee Meeting*, Tampa, FL (4–8 Dec 1995).

Srinivasan R, Gopalan P, and Murphy JC
Optimization of cathodic protection in buried gas pipelines: Use of magnetometer and numerical techniques, *AGA Seminar on NDT Techniques*, Battell, Columbus, OH (22 May 1995).

Srinivasan R, Gopalan P, and Wickenden DK
Deposition of copper on gold (100) surface, *188th Meeting of the Electrochemical Society*, Chicago, IL (8–13 Oct 1995).

Sternberger WI, and Greenberg RS (JHMI)
Assessment of an epidural blockade monitor, *American Society of Anesthesiologists*, Atlanta, GA (25 Oct 1995).

Thomas ME, Cotter TM, and Constantikes KT
Infrared properties of polycrystalline magnesium fluoride, *6th DoD Electromagnetic Windows Symp.*, U.S. Army Space and Strategic Defense Command, Redstone Arsenal, Huntsville, AL (17–19 Oct 1995).

Tropf WJ
Modeling and estimating window material properties, *6th DoD Electromagnetic Windows Symp.*, U.S. Army Space and Strategic Defense Command, Redstone Arsenal, Huntsville, AL (17–19 Oct 1995).

Uy OM
Contamination, *MSX PI Briefing to SMTS*, TRW, El Segundo, CA (9 Nov 1995).

Uy OM, Boies MT, Lesho JC, and Wilkinson W
The use of total pressure gauges in space aplications, *42nd National Symp. of the American Vacuum Society*, Minneapolis, MN (16–20 Oct 1995).

The following oral presentations were given at the 3rd Symposium on Research and Development at The Johns Hopkins University Applied Physics Laboratory, Laurel, MD (7–8 Nov 1995):

Bao G (JHU), Jiang W (JHU), and Roberts JC
Analytic and finite element solutions for bending and buckling of orthotropic rectangular plates.

Bitman WR
A comparison of data modification history algorithms for relational information systems.

Bowen WE
Fuzzy logic clutter discrimination for cruise missile imaging seekers.

Burkom HS (SFA, Inc.), and Sari JW
Multiband matched-filter technique for low-Doppler detections.

Cole TD
Design and implementation of the Laser Range Finder for the Near Earth Asteroid Rendezvous (NEAR) mission.

Coon AC
Demonstration of Navy sonobuoy dipole procesing techniques for land-based Army microphone sensors.

Corvelli AA (JHU), Roberts JC, and Biermann PJ
Development of a composite intermedulary implant.

Donohue DJ
A computational method for improving approximate rough surface scattering calculations.

Gopalan P, Srinivasan R, Zarriello R, Myles-Tochko CJ, and Meyer J
Anomalies in CP current distribution in a concrete bridge.

Guo Y, Yionoulis S, Chase C, Murphy P, and Cheng A
Modeling asteroid shape with NLR measurement data.

Hamill BW
Helium speech intelligibility testing in a noisy saturation diving environment.

Jenkins A (Univ. of MD, Baltimore County), Murray GM (Univ. of MD, Baltimore County), and Uy OM
Polymer-based selective fluorometric sensor for chemical agents sarin and soman.

Jiang W (JHU), Bao G (JHU), and Roberts JC
Finite element analysis of stiffened and unstiffened orthotropic plates under in-plane and out-of-plane loads.

Kistenmacher TJ, Ecelberger SA, and Stoner BR (Kobe Steel USA, Inc.)
Polar and azimuthal correlations for an oriented mosaic of (001)diamond crystallites on (001)silicon.

Le BQ, Clatterbaugh GV, Lohr D, and Snow PR
Miniaturized design of the Freja magnetometer signal processor.

Marble JA
Increasing signal-to-noise ratio of unexploded ordnance by spatial matched filtering.

Maryak JL, Spall JC, Asher MS, and Sedegh P (Technical Univ. of Denmark)
A neural network approach to nondestructive evaluation of complex structures, with application to highway bridges.

McCally RL, Connolly PJ (JHMI), Jain S (JHMI), Green WR (JHMI), Stark WJ (JHMI), and Azar DT (JHMI)
Investigation of haze following excimer laser keratectomy.

Mechtel DM (U.S. Naval Academy), and Charles HK Jr
Electro-optic probing of GaAs and InP.

Roberts JC, and Carkhuff BG
Transient and steady-state temperatures in hybrid high/low thermal conductivity composites.

Spall JC
System understanding and uncertainty bounds from a small amount of data.

Spicer JWM, Osiander R, Chang Y, and Hildebrand RJ
Time-resolved microwave thermal reflectrometry for infrastructure inspection.

Srinivasan R, and Gopalan P
CP current distributions in pipelines with aged coatings.

Sternberger WI, and Greenberg RS (JHMI)
Assessment of an epidural blockade monitor.

Sullins G
Interactions created by a jet reaction control system on an interceptor.

White ME, Chiu HY, VanWie DM, D'Alessio SM, Cusick RT, Pue AJ, Holland RL, Tilson RE, and Rodeffer CC
Counterforce weapon system study.

The following poster presentations were given at the 3rd Symposium on Research and Development at The Johns Hopkins University Applied Physics Laboratory, Laurel, MD (7–8 Nov 1995):

Ali S
ISO-9000 back to basics.

Apel JR
Internal solitons in the ocean: Subsurface dynamics from surface radar signatures.

Bach CL (Salisbury State Univ.) Kistenmacher TJ, Wickenden DK, Hawley ME (Los Alamos Nat. Lab.), and Leavitt RP (U.S. Army Res. Lab.)
Surface morphology and mosaic dispersion in GaN and $Al_xGa_{1-x}N$ films grown by low-pressure MOCVD.

Bailey LE, Demaree RD, and Quaranta TF
Camera-mounted balloon dilation for laparoscopic procedures.

Bailey LE, Roberts JC, and Jones DL (George Washington Univ.)
Optimal design parameters for thermal and mechanical performance of a metal/composite joint.

Bevan MG, and Uy OM
A miniature quadrupole mass spectrometer with electron multiplier.

Bressler NM (JHMI), Cain RP, and Steigerwald DG
An intelligent pen-based ophthalmologic patient record.

Bryden WA, Benson RC, Ecelberger SA, Phillips TE, and Cotter RJ (JHMI)
Tiny-TOF MALDI mass spectrometry for particulate drug and explosives detection.

Budman CA
High-confidence reliability assessment of complex systems through subsystem testing.

Charles HK Jr
Advanced electronic packaging with multichip modules.

Chen MH, Christens-Barry WA, and Partin AW (JHMI)
Application of an entropy measure for an iterative maximum entropy histogram equalization procedure.

Chen MH, Hanson JM, Iannuzzelli RJ, Marcotte FJ, and Wen H (NIH)
A radio frequency cardiac and respiratory cycle monitor.

Chin DC, and Chase CJ
Optimization techniques for inversion of global magnetospheric images.

Chin DC, Smith RH, and Spall JC
A system-wide approach to adaptive traffic control.

Cornwall DA
Finite element modeling of the acoustic field and fluid-structure interface of an enclosure with one flexible side.

Cranmer JH, and Cohen PH
Ultrasonic imaging of diverse components.

Cristion JA, Moses EJ, Rapport ID, and Love AE Jr
Generalized time–frequency and wavelet transforms.

Ecelberger SA, Phillips TE, Benson RC, Cornish TJ (JHMI), Cotter RJ (JHMI), and Bryden WA
Tiny-TOF mass spectrometer: Design and recent improvements.

Ecker JA, and Wozniak JJ
Advanced Natural Gas Vehicle development.

Folkerts JT, Uy OM, Ginther MJ, and Street K Jr (NASA Lewis Research Center)
Toxic metal removal from electroplating baths.

Freund DE, McCally RL, Farrell RA, and Sliney DH (U.S. Army Center for Health Promotion and Preventive Medicine)
Theoretical comparisons of retinal temperature changes from rectangular and Gaussian beams.

Gearhart SA, Harris TJ, Kardian CJ, Prendergast DT, and Winters DT
A hardware-in-the-loop test facility for dual-mode infrared and radar guidance systems.

Giannini JA
GFO data validation using Internet audio/graphics conferencing and World Wide Web collaborations.

Giannini JA, and Kilgus CC
A fuzzy logic correction for the IRI90 climatologic ionospheric model.

Green WJ, Christens-Barry WA, Farrell RA, and McCally RL
Spatial mapping of polarized light transmission in the central rabbit cornea.

Hill SD, and Fu MC (Univ. of MD)
Optimization of an urban bus system using a simultaneous perturbation stochastic approximation algorithm.

Immer EA
The QUICK conceptual schema definition language.

Keath EP, McEntire RW, Cheng AF, Green WJ, and Gold RE
Compact laser ablation reflectron time-of-flight mass spectrometer.

Koch MI, Chin DC, and Smith RH
A network-wide approach to optimal signal light timing for integrated transit vehicle and traffic operations.

Kuttler JR
Numerical electromagnetics.

Lazoff DM, and Stephens B (Univ. of MD, Baltimore County)
Optimal location of broadcast sites in unreliable communication networks.

Le BQ, Nhan E, Maurer RH, Lew AL, Schwartz PD, and Lander J (Old Dominion Systems)
Chip-on-board technology for space electronics design.

Le BQ, Stillman LE, Cole TD, Rodriguez D, Reiter A, Moore R, Boies MT, Schaefer E, and Krein S
Lightweight Laser Range Finder packaging design.

Lesho JC
MOS and laser particulate detectors for satellites.

Lesho JC, and Eaton HAC
A three channel telemetry system with optical interface.

Magee TC
Thermal balance testing and model correlation of the Special Sensor Ultraviolet Spectrographic Imager (SSUSI).

Miragliotta J, Phillips TE, and Thomas ME
Infrared absorption for diagnostic detection of *Helicobacter pylori* infection.

Parthasarathy KN, and Frostbutter DA
Applications of computational fluid dynamics to vehicle flow fields.

Phillips TE, Bargeron CB, and Benson RC
Thermal desorption of selected condensed spacecraft-related materials.

Pineda FJ
The nature of TD(λ).

Pineda FJ, Ryals K, and Steigerwald D
Acoustic transient processing using the Hopkins electronic ear.

Raul R, Parthasarathy KN, and Wozniak JJ
Numerical simulation of natural gas powered internal combustion engine.

Roberts JC
In-plane and out-of plane failure of $3' \times 6'$ orthotropic fiber reinforced plastic (FRP) hat-stiffened plates.

Romenesko BM, Wajer SD, Clatterbaugh GV, and Cohen PH
Stress cracking in high reliability electronic components.

Rust DM, Murphy GA, Strohbehn K, Cain RP, Eaton HAC, Keil SL (Air Force Phillips Lab.), Wiborg P (Air Force Phillips Lab.), and Keller CU (National Solar Observatory)
The Flare Genesis Experiment.

Ryals K, and Bembenek M
Test and evaluation data collection: Low cost–high quality.

Sadegh P (Technical Univ. of Denmark), and Spall JC
Optimal sensor location for failure detection and diagnosis in complex systems.

Schneider W, Johnson KO (Krieger Mind/Brain Inst.), Wenstrand DS, and Killebrew JH (Krieger Mind/Brain Inst.)
A high-resolution tactual display for somatosensory research.

Schuster PR, Miragliotta JA, Thomas ME, and Rust DM
Development of photorefractive optical filters for electro-optic systems.

Thomas ME, and Duncan DD
Broadband DIAL.

Tropf AZ (Atholton High School), and Thomas ME
Optical properties of KRS-5.

Uy OM, Folkerts JT, and Fogel SA
Use of ion exchange material for removal of hazardous contaminants in Navy wastes.

Vasholz DP
Upstream–downstream asymmetry in stratified wakes.

Wajer SD
Digital SEM and EDS microanalytical techniques.

Wickenden DK, Bryden WA, Kistenmacher TJ, Bythrow PF, and Strohbehn K
$Al_xGa_{1-x}N$ alloy semiconductors for solar-blind UV detectors.

Wienhold PD, House MA, and Magee TC
Design and fabrication of a damped composite cylinder.

COLLOQUIA

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

1 Dec 1995
The Future of Biodiversity, SL Pimm, Univ. of Tennessee.

8 Dec
Context-Based Exploitation of Aerial Images, R Chellappa, Univ. of Maryland.

15 Dec
A Century of Polar Expedition, TA Potemra, APL.

5 Jan 1996
Population Growth and Earth's Human Carrying Capacity, JA Cohen, Rockefeller Univ.

19 Jan
Macromolecular Confirmations by Picosecond Spectroscopy, L Brand, Department of Biology, JHU.

26 Jan
Japanese Manufacturing Methodologies and Practices, J Hines, AT&T Microelectronics.

2 Feb
Safe and Clean Energy from the Moon, G Kulcinski, Univ. of Wisconsin.

9 Feb
U.S. Navy Telemedicine, Capt. LE Antosek, USS *Abraham Lincoln*.

16 Feb
Hot Electron Physics and Detectors in Superconductors, DE Prober, Yale Univ.

23 Feb
New and Emerging Infections, DA Henderson, School of Public Health and Hygiene, JHU

U.S. PATENTS (1995)

APL staff members received the following U.S. patents during 1995:

PD Schwartz
High Speed Propagation Delay Compensation Network, No. 5,379,299 (3 Jan): A delay compensating circuit for equalizing the propagation and processing delays from data sources that are read sequentially by a central data processing unit.

JL Abita
Non-Magnetic Alloy, No. 5,385,618 (31 Jan): A nonmagnetic alloy of copper and manganese.

RW Flower
Methods and Apparatus for Improved Visualization of Choroidal Blood Flow and Aberrant Vascular Structures in the Eye Using Fluorescent Dye Angiography, No. 5,394,199 (28 Feb): A method and modified fundus camera for visualizing the choriocapillaris of the eye in a sequence of ICG angiographic images.

AF Hogrefe, JC Lesho, and HAC Eaton
AM/FM Multi-Channel Implantable/Ingestible Biomedical Monitoring System, No. 5,415,181 (16 May): A multi-channel circuit for inductively telemetering signals representing physiological values from a point in a human body to a receiver outside of the body.

DM Rust
Integrated Dual Imaging Detector, No. 5,438,414 (1 Aug): An integrated dual imaging detector on a single silicon chip that permits the simultaneous acquisition and processing of two polarization images of rapidly changing subjects.

FOREIGN PATENTS (1995)

APL staff members received the following foreign patents during 1995:

AL Newman and WD Stanbro
Phase Sensitive Differential Polarimetry Technique and Apparatus, No. 2,076,033 (Canada) (11 Apr): A differential polarimeter for detecting changes in optical rotation between a test cell and reference cell in which the sensitivity of the system is enhanced through the use of a phase-sensitive differential polarimetric technique.

RE Fischell
Programmable Control Means for Providing Safe and Controlled Medication Infusion, No. 1961430 (Japan) (25 Aug): A control means for actuating the pump in an implantable infusion pump device in a safe and programmable manner.