

PUBLICATIONS

The following list is a compilation of recently published technical articles written by APL staff members.

- V. Uzunoglu and M. H. White (Westinghouse Electric Corp.), "Electric Fields in Transistors," *Semiconductor Products and Solid State Technology*, **8**, Feb. 1965, 12-17.
- R. H. Cantrell, F. T. McClure, and R. W. Hart, "Effects of Thermal Radiation on the Acoustic Response of Solid Propellants," *A.I.A.A. J.*, **3**, Mar. 1965, 418-426.
- T. C. Cheston, "On the Matching of Phased Array Antennas," *I.E.E.E. Trans. on Antennas and Propagation*, **AP-13**, Mar. 1965, p. 327.
- M. L. Hill, "Skyrocket, World Record Altitude Model," *Science and Mechanics*, **35**, Mar. 1965, 89-97.
- G. L. Dugger, "Obscurantism vs Enlightenment," *J. Spacecraft and Rockets*, **2**, Mar.-Apr. 1965, p. 127.
- L. S. Glover, "Effects on Roll Rate of Mass and Aerodynamic Asymmetries for Ballistic Re-Entry Bodies," *J. Spacecraft and Rockets*, **2**, Mar.-Apr. 1965, 220-225.
- F. J. Adrian, "Quadrupolar Relaxation of Xe¹³¹ in Xenon Gas," *Phys. Rev.*, **138**, Apr. 19, 1965, A403-A409.
- J. T. Massey, A. G. Schulz, S. M. Cannon, and B. F. Hochheimer, "Relationship of Electron Parameters to External Electric Parameters in a Radio Frequency Excited He-Ne Discharge," *J. Appl. Phys.*, **36**, May 1965, 1790-1791.
- G. F. Pieper (NASA), C. O. Bostrom, and A. J. Zmuda, "Trapped Protons in the South Atlantic Magnetic Anomaly, July Through December 1961, 1, The General Characteristics," *J. Geophys. Res.*, **70**, May 1, 1965, 2021-2033.
- C. O. Bostrom, A. J. Zmuda, and G. F. Pieper (NASA), "Trapped Protons in the South Atlantic Magnetic Anomaly, July Through December 1961, 2, Comparisons with Nerv and Relay I and Discussion of the Energy Spectrum," *J. Geophys. Res.*, **70**, May 1, 1965, 2035-2043.
- A. J. Zmuda, G. F. Pieper (NASA), and C. O. Bostrom, "Trapped Protons in the South Atlantic Magnetic Anomaly, July Through December 1961, 3, Magnetic Storms and Solar Proton Events," *J. Geophys. Res.*, **70**, May 1, 1965, 2045-2056.
- J. O. Artman and J. C. Murphy (APL), and S. Foner (M.I.T.), "Magnetic Anisotropy in Antiferromagnetic Corundum-Type Sesquioxides," *Phys. Rev.*, **138**, May 3, 1965, A912-A917.
- R. E. Fischell and L. Wilson, "Spacecraft Application of Subliming Materials," *J. Spacecraft and Rockets*, **2**, May-June 1965, 376-379.

ADDRESSES

- D. J. Zimmerman, "R & D in Miniaturization," *Maryland Academy of Sciences*, Program for High School Teachers, Department of Education Seminars, Hughesville, Md., Feb. 3, 1965.
- W. H. Guier, "Recent Progress in Satellite Geodesy," *I.E.E.E. National Winter Convention on Military Electronics*, Los Angeles, Feb. 3-5, 1965.
- C. G. Dunkle, "Explosions and Explosives," *U.S. Naval Propellant Plant*, Scientists and Engineers Club, Indian Head, Md., Mar. 10, 1965.
- J. Dassoulas, "Space Technology," *Davis and Elkins College*, Elkins, W. Va., Mar. 16, 1965.
- W. Garten, Jr., "Plasma Flow in a Multipole Magnetic Channel," *National Aeronautics and Space Administration*, Fluid Physics Contractors Conference, Washington, D.C., Mar. 16, 1965.
- W. E. Buchanan, "Applied Physics Laboratory, Its Mission and Accomplishments," *Brotherhood of Temple Emanuel*, Kensington, Md., Mar. 24, 1965.
- B. R. Tossman, "A Resonance Technique for Measurement of Satellite Magnetic Dipole Moments," *National Aeronautics and Space Administration*, Magnetic Workshop, Pasadena, Calif., Mar. 30-Apr. 1, 1965.
- A. I. Mahan, "Cylindrically Guided Waves in an Absorbing or 'Active' Maxwellian Type Medium," *Optical Society of America*, Dallas, Mar. 30-Apr. 3, 1965.
- Jane Olmer, "Use of a Computer in a Business Environment — A Case History (Information Systems Analysis and Design)," *The Johns Hopkins University*, Seminar in Computer Sciences, Apr. 1, 1965.
- S. D. Bruck, "The Pyrolytic Conversion of Poly[N,N'-(p,p'-oxydiphenylene) pyromellitimide] Into a Semiconductor," *American Chemical Society, Division of Polymer Chemistry*, Detroit, Apr. 4-9, 1965.
- S. D. Bruck, "Thermal Degradation of Piperazine Polyamides," Joint Meeting of the *American Chemical Society (Maryland Section)* and *Chemical Society of Washington*, College Park, Md., May 7, 1965.
- F. F. Mobley and R. E. Fischell, "Orbital Results from Gravity-Gradient Stabilized Satellites," *Ames Research Center (NASA)*, Symposium on Passive Gravity-Gradient Stabilization, Moffett Field, Calif., May 10-11, 1965.
- D. J. Williams and J. W. Kohl, "Loss and Replenishment of Electrons at Middle Latitudes and High B Values," *Sixth International Space Science Symposium (COSPAR)*, Buenos Aires, Argentina, May 13-19, 1965.
- S. D. Bruck, "The Mechanism of Thermal Degradation of H-Film and Its Conversion to Semiconducting Products," *Du Pont Experimental Station*, Film Department Seminar, Wilmington, Del., May 19, 1965.

The papers listed below were presented at the *American Geophysical Union, 46th Annual Meeting*, Washington, D.C., Apr. 19-22, 1965:

- D. J. Williams, "Observations of Low Altitude Outer Zone Electrons and Their Movement Within the Magnetosphere";
- G. D. Mead (NASA) and D. J. Williams, "Calculations of Day-Night Asymmetries in a Distorted Magnetosphere Assuming Conservation of the Longitudinal Invariant";
- D. J. Williams and G. D. Mead, "Observations of Radiation Cavity Asymmetries and Their Relation to Magnetosphere Distortions";

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- C. O. Bostrom, D. J. Williams, and D. S. Beall, "Time Decay of the Artificial Radiation Belt";
- D. J. Williams and J. W. Kohl, "Observations of Electrons in the Region $2 \leq L \leq 3$ and 1100 km";
- A. J. Zmuda, C. R. Haave, and B. W. Shaw, "VLF Disturbances Produced by the Soviet High-Altitude Nuclear Explosions of October 22 and 28 in 1962."

The papers listed below were presented at the *A.I.A.A. Propulsion Joint Specialist Conference* at Colorado Springs, Colo., from June 14-18, 1965. Chairmen of the sessions on ducted rockets and on air-augmented rockets were Drs. W. H. Avery and G. L. Dugger, respectively.

F. S. Billig and S. E. Grenleski,

"Combustion Development for a Liquid-Fueled Supersonic Combustion Ramjet Missile";

- F. S. Billig and C. L. Yates, "Experimental Results and Techniques for Data Analysis of a Hydrogen-Fueled Supersonic Combustor";
- B. Deklau and M. Shandor, "Results of Tests on Air-Augmented Liquid Rocket Motor";
- G. L. Dugger, "A Supersonic Combustion Ramjet Missile for Naval Applications";
- J. L. Kiersey, C. B. Baker, and M. L. Snow, "Design and Test Evaluation of a Three-Module Hypersonic Inlet";
- H. J. Unger and F. K. Hill, "Spectroscopic Measurements of Combustion Gas Composition in Supersonic Flow";
- R. E. Walker and G. L. Dugger, "Air Augmentation for Solid-Propellant Ballistics Missiles";
- R. E. Walker and L. L. Perini, "Analysis of Air-Augmented Solid Rockets."

PATENTS

- E. L. Nooker—*Warhead Projectile*, Patent No. 3,160,099.
- R. B. Kershner and F. H. Swaim—*Jet Control by Rotatable Offset Nozzle*, Patent No. 3,165,889.
- I. H. Schroader, M. E. Hosea, L. C. Miller, and F. F. Hiltz—*Missile Programmer Coast Mode Provision*, Patent No. 3,164,339.
- R. H. Lapp—*Harmonic Drive Adjusting Means*, Patent No. 3,166,949.
- I. H. Schroader, M. E. Hosea, and L. C. Miller—*Multiple Flight Course Second Order Missile Programmer*, Patent No. 3,169,727.
- H. S. Morton and Z. M. Raffel—*Equal Length Detonating Cords for Warhead Detonation*, Patent No. 3,170,402.

WITH THE AUTHORS



G. T. Munsterman, a native of Evanston, Illinois, is the author of "Tunnel Diode Microwave Amplifiers." He received his B.S. degree in electrical engineering from Northwestern University in 1962 and has completed his course work for an M.S. degree from George Washington

University. Prior to coming to APL in 1962, he was employed part-time at General Telephone Laboratories, Northlake, Illinois. Mr. Munsterman is a specialist in microwave solid-state technology and in microwave systems and components, and he is on the staff of the Microwave Techniques Project of the Bumblebee Guidance Homing Group at APL. He is a member of the Institute of Electrical and Electronic Engineers.



R. M. Rivello, author of "A Method for Optimizing Insulated Structures for Hypersonic Vehicles," was a co-author in the Sept.-Oct. 1963 *Digest* of "A Method of Analysis for Clamped-Free Cylindrical Shells." He received his M.S. degree in mechanical engineering from the University of Maryland in 1948, and is now a consultant at APL in structural analysis research and in stress and loads analy-

sis in the Bumblebee missile programs. He is also associate professor of aerospace engineering at the University of Maryland. Mr. Rivello is a member of the American Society of Mechanical Engineers, the American Institute of Aeronautics and Astronautics, and the Washington Academy of Sciences.

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sis in the Bumblebee missile programs. He is also associate professor of aerospace engineering at the University of Maryland. Mr. Rivello is a member of the American Society of Mechanical Engineers, the American Institute of Aeronautics and Astronautics, and the Washington Academy of Sciences.