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- D. W. Fox, "New Developments in Lower Bounds for Eigenvalues," Applied Mathematics Colloq., Institut für Angewandte Mathematik, Johannes Gutenberg Univ., Mainz, FRG, 6 Oct 1980.
- R. M. Fristrom, "Chemical Factors in the Inhibition and Extinction of C-H-O Flames by Halogenated Compounds Interpreted with a Zone Flame Model," Meeting, Western States Section, The Combustion Institute, Los Angeles, 20-21 Oct 1980.
- L. W. Hunter, "Fire Protection System Modelling: The Fire Resistance of Walls Penetrated by Electric Cables," 8th Water Reactor Safety Research Information Meeting, Gaithersburg, Md., 27-31 Oct 1980.
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- K. Moorjani, "Magnetism in Disordered Solids," Seminar, Center for Materials Research, The Johns Hopkins Univ., Baltimore, 8 Oct 1980.
- J. C. Murphy, "Photoacoustic Spectroscopy and Photothermal Microscopy," Physics Dept. Seminar, Martin Marietta Labs, Baltimore, 10 Dec 1980.
- V. O'Brien, "Flow in an Occluded Artery Model," Fluid Dynamics Division Meeting, American Physical Society, Cornell Univ., Ithaca, 25 Nov 1980; abstract published in *Bull. Am. Phys. Soc.* **25**, No. 9, p. 1105 (1980).
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- V. O'Brien and L. W. Ehrlich, "Pulsatile Flow through a Constricted Artery," 2nd Mid-Atlantic Conf. on Biofluid Mechanics, Virginia Polytechnic Inst. and State Univ., 4-6 May 1980.
- D. K. Pace, "Battle Group Anti-Air Warfare Coordination Data Link Analysis," 46th Symp., Military Operations Research Society, Naval War College, Newport, 2-4 Dec 1980.
- D. K. Pace, "Opportunities for Analysis in Response to Battle Group Anti-Air Warfare Coordination," 2nd Aegis Analysts Meeting, RCA, Moorestown, N. J., 19-20 Nov 1980; also presented at 46th Symp., Military Operations Research Society, Naval War College, Newport, 2-4 Dec 1980.
- R. S. Potember, "Electrical Switching and Memory Phenomena in Organic Charge Transfer Complexes," Colloq., Univ. Southern Calif., 2 Dec 1980.
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- R. S. Potember, "Switching and Memory Effect in Charge-Transfer Complexes," Meeting, Design of Molecular Systems for Electronic Devices, Institute of Molecular Science, Okazaki, Japan, 29 Nov 1980.
- J. C. W. Rogers, "Downstream Boundary Conditions for Incompressible Flows," Applied Mathematics Colloq., New York Univ., 3 Oct 1980; Mathematics Seminar, Univ. Arizona, 20 Oct 1980; Thermo- and Gas-Dynamics Div. Seminar, NASA-Ames, 28 Oct 1980.
- J. C. W. Rogers, "Numerical Solution of a Gasification Problem," Seminar, Fachbereich 19, Freie Univ., Berlin, 11 Nov 1980.
- J. C. W. Rogers, "Numerical Solution of Hyperbolic and Parabolic Conservation Laws," Mathematics Colloq., Univ. California, Davis, 21 Oct 1980; Numerical Analysis Seminar, Stanford Univ., 22 Oct 1980; Mathematics Seminar, Polytechnic Inst. of New York, 29 Oct 1980; Applied Mathematics Colloq., Univ. of Delaware, 4 Dec 1980.
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APL COLLOQUIA

- Dec. 5, 1980—"District Heating and Cooling," T. B. Taylor.
- Dec. 12—"Very Long Baseline Radio Interferometry," C. C. Counselman, Massachusetts Inst. of Technology.
- Dec. 19—"The Case for an Initial Cosmological Singularity," F. J. Tipler, Univ. of Texas.
- Jan. 9, 1981—"The Neural Processing Speech," M. B. Sachs, The Johns Hopkins Univ.
- Jan. 16—"The Case for Magnetic Sensitivity in Birds and Bees (Such As It Is)," J. L. Gould, Princeton Univ.
- Jan. 23—"The Evolution of Intelligence and Language," B. G. Campbell, Univ. of California, Los Angeles.
- Jan. 30—"Automating Medical Image Analysis," J. B. Garrison and R. E. Jenkins, APL.
- Feb. 6—"Defects in Amorphous Solids," T. Egami, Univ. of Pennsylvania.
- Feb. 13—"Modern Gauge Theories for Pedestrians," G. Domokos, The Johns Hopkins Univ.
- Feb. 20—"The Continuing Adventures of Voyager I: The Saturn Encounter," B. A. Smith, Univ. of Arizona.
- Feb. 27—"Slow Earthquakes," I. S. Sacks, Carnegie Inst. of Washington.

THE AUTHORS



HAROLD D. BLACK was born in North Carolina in 1926. He was educated in engineering at North Carolina State College (B.S., 1950) and at the Carnegie Institute of Technology (M.S., 1952). He worked at Rohm and Haas Co. in Huntsville, Ala. during 1951-53 and at the Armour Research Foundation of the Illinois Institute of Technology during 1953-57. He joined APL in 1957 and the Space Department in 1958. During 1970-1971 he was a Parsons Fellow in biomedical engineering. He is Supervisor of the Space Analysis and Computation Group. Black's hobbies are gardening and classical music.



WILLIAM H. GUIER is a member of the Biomedical Programs Office. Born in Wichita in 1926, he studied physics at Northwestern University, receiving an M.S. degree in experimental physics and the Ph.D. in theoretical physics (1951).

His career at APL began with a temporary assignment to Princeton University's Project Matterhorn, which engaged in feasibility studies of thermonuclear weapons. In the Research Center, his activities were primarily in theoretical studies related to missile guidance. In collaboration with G. C. Weiffenbach, he made the basic discovery that laid the groundwork for the Transit satellite system. He was the first recipient of the Outstanding Young Scientist Award of the Maryland Academy of Sciences (1959).

Guier's research interests are in diagnostic and therapeutic techniques in critical care medicine. He holds a joint appointment in the School of Medicine as an associate professor of biomedical engineering.



ROBERT R. NEWTON supervises the Space Sciences Branch. Born in Chattanooga in 1918, he received his training in physics at the Ohio State University (Ph.D., 1946). After two years with Bell Labs and a physics teaching career at the University of Tennessee and Tulane University, he joined APL in 1957, devoting his time to the study of satellite and space probe flight mechanics. His recent interests deal with the use of ancient astronomical measurements to study the time variation of nongravitational forces in the solar system. Several books have resulted, one of which, *The Crime of Claudius Ptolemy*, (Johns Hopkins Press, 1977) documents that much of the data in Ptolemy's well-known treatise *Syntaxis* was fabricated.

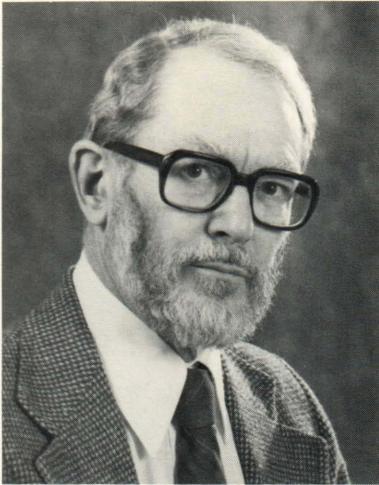


RICHARD B. KERSHNER is Principal Advisor for Space Systems, following a distinguished career as Head of the Space Department and Assistant Director of the Laboratory. Born in Crestline, Ohio, he received a Ph.D. degree in mathematics from The Johns Hopkins University in 1937.

After five years of mathematics teaching at the University of Wisconsin and Johns Hopkins, he became involved during the war years with solid rocket research and development at the Carnegie

Institution of Washington and the Allegany Ballistics Laboratory.

Since 1946, at APL, Dr. Kershner supervised the development of supersonic guidance test vehicles, headed the Terrier/Tartar Division, the Polaris Division (1958-1963), and the Space Department (1958-1978). Kershner has received four Distinguished Public Service Awards, three from the Navy and one from NASA. He also received The Johns Hopkins University Eisenhower Medal in 1981.



GEORGE C. WEIFFENBACH was born in Newark, N.J. in 1921. He was educated at Harvard and Catholic Universities where he received, respectively, the A.B. (1949) and Ph.D. in physics (1958).

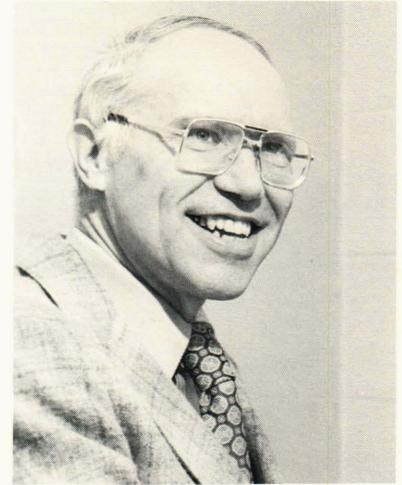
He joined the APL Research Center in 1951 and the Space Department at its inception in 1958. He shared with W. H. Guier the discovery of the basic technique of satellite orbit determination using Doppler data. Dr. Weiffenbach left APL in 1969 to become Director of Geoastronomy Programs at the Smithsonian Astrophysical Observatory (SAO)(1969-73). He was then named Associate Director of the SAO/Harvard Center for Astrophysics (1973-77). During 1978-79 he was a staff physicist at Lincoln Laboratories. He returned to APL in 1979 and is now Head of the Space Department.



THEODORE WYATT was born in Cincinnati in 1919. Following graduation from the University of Missouri in 1941 with a B.S. in chemical engineering, he joined E. I. duPont de Nemours, to which he returned after service as a World War II Marine Corps fighter pilot. Subsequently he designed rockets at Bell Aircraft. He returned to active duty during the Korean and Vietnamese Wars, serving as a test pilot and guided missile program manager. He was a Marine Corps member of a mobilization planning group under the Office of the Secretary of Defense (OSD).

Mr. Wyatt joined APL in 1949 and was initially engaged in rocket and missile development and program planning. He was loaned to OSD for two years as a consultant on early warning systems. An early member of the Space Department, he was the Transit project engineer during 1959-69 and since has managed other space programs.

In his spare time Mr. Wyatt farms in Frederick County.



LEE PRYOR is a Maryland native, born in Hagerstown (1935). He was educated at Frostburg State College (B.S. in education, 1957) and received the M.A. in mathematics from Pennsylvania State University in 1962. He taught high school mathematics during 1957-59. He joined APL in 1962, and was responsible for much of the Transit System software design and implementation. He currently supervises the Programming Section of the Space Department's Space Analysis and Computation Group. Mr. Pryor enjoys bicycling (he frequently commutes to APL by bicycle), skiing, and gardening.