F. Landis Markley

Francis Landis Markley, Jr., was born in Philadelphia, Pennsylvania, on July 20, 1939, and spent his formative years in Cheltenham, Pennsylvania. From 1957 until 1961 he was an Engineering Physics major at Cornell University (B.E.P. 1962), after which he studied Theoretical Physics at the University of California at Berkeley, receiving the Ph.D. in 1967.

From 1967 until 1974 he pursued an academic career in Physics. In the academic year 1967–1968 he was a National Science Foundation postdoctoral fellow in the Department of Physics and Astronomy at the University of Maryland, College Park, Maryland. From 1968 until 1974, he was an assistant professor of Physics at Williams College, Williamstown, Massachusetts.

In 1974 he began a career in Aerospace as a member of the technical staff of the Computer Science Corporation's Attitude Systems Operation in Silver Spring, Maryland. At CSC he was responsible for designing and implementing a real-time dynamic simulator and for developing and testing prototype onboard attitude determination and control software for the Solar Maximum Mission (SMM) spacecraft on that platform. He also worked on variation-of-parameter formulations of attitude dynamics, and on spacecraft orbit/attitude estimation using landmark and earth-edge data.

He joined the Naval Research Laboratory, Washington, D.C., in 1978. He was the principal investigator in a study of autonomous satellite sensor systems and their use in determining the attitude/orbit state of a satellite or constellation of satellites. He developed computationally efficient Kalman Filtering algorithms for simultaneous attitude/orbit estimation. He improved and applied methods for analyzing the Earth coverage provided by satellite constellations. He devised slew-maneuver strategies for a spacecraft with flexible appendages. His famous paper with Gene Lefferts and Malcolm Shuster on the Kalman filtering of spacecraft attitude was published during his time at NRL.

In 1985, Dr. Markley moved to NASA Goddard Space Flight Center in Greenbelt, Maryland, where he has remained for the past 23 years. He began as an Aerospace engineer in the Flight Dynamics Analysis Branch. In 1986–1988 he led the Mathematical Analysis Section, and in 1989 he moved to the Guidance and Control Branch, serving as the Head of the Control System Software and Simulation Section in 1989–1990. During 1990–1994 he was Assistant Head of the Guidance and Control Branch.

During his time at NASA Goddard Space Flight Center, Dr. Markley contributed to the development of spacecraft attitude and orbit determination and to spacecraft attitude control. He supported numerous missions, including: the Hubble Space Telescope (HST), The Upper Atmosphere Research Satellite (UARS), the Solar Anomalous and Magnetospheric Particle Explorer (SAMPEX), the Compton Gamma Ray Observatory (CGRO), the Tropical Rainfall Measuring Mission (TRMM), the Rossi X-

Ray Timing Explorer (RXTE), the Wilkinson Microwave Anisotropy Probe (WMAP), the Laser Interferometer for Space Astronomy (LISA), the Space Technology-7 (ST-7) mission, several of the Geostationary Operational Environmental Satellite (GOES) missions, and the James Webb Space Telescope (JWST).

At Goddard Space Flight Center he has hosted the National Research Council Resident Research Associateships of Itzhack Bar-Itzhack, John L. Crassidis, Nadav Berman, and Yaakov Oshman. He has received a dozen awards for his service at NASA Goddard Space Flight Center. In 2000, he was named a Goddard Senior Fellow.

Dr. Markley has been an associate editor of the *American Journal of Physics* (1974–1976) and of the *Journal of Guidance, Control and Dynamics* (1983–1985, 1992–1994), He has been a member since its inception of the editorial board of the Space Technology Library, published by Springer Scientific + Business Media. From 1995 until 2000, he was a member of the AIAA Guidance, Navigation and Control Technical Committee. He was awarded the American Institute of Aeronautics and Astronautics (AIAA) Mechanics and Control of Flight Award in 1998 and the Dirk Brouwer Award of the American Astronautical Society (AAS) in 2005. He is the author of more than 50 journal articles and 100 conference articles. He is a fellow of the AIAA and the AAS.