F. LANDIS MARKLEY

Guidance Navigation and Control Systems Engineering Branch,
NASA Goddard Space Flight Center
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SYNOPSIS Over thirty years experience in spacecraft orbit and attitude dynamics, estimation and control, sensor calibration, simulation, flight software development, and space mission design. Fellow of the American Institute of Aeronautics and Astronautics. Fellow of the American Astronautical Society. Member of the Society for Industrial and Applied Mathematics.

EDUCATION Ph. D. Theoretical Physics, University of California, Berkeley, CA, 1967
Bachelor of Engineering Physics, Cornell University, Ithaca, NY, 1962

OTHER TRAINING

Goddard Leadership Education Series (GLES), October 1987
NASA Management Education Program (MEP), March 1993

EDITORIAL POSITIONS

Editorial Board, *Space Technology Library*,
Springer Scientific + Business Media, since 1985

Associate Editor, *Journal of Guidance, Control, and Dynamics* (AIAA), 1983–85, 1992–94

Associate Editor, *American Journal of Physics*, 1974–76

Reviewer

Journal of Guidance, Control, and Dynamics
The Journal of the Astronautical Sciences
IEEE Transactions on Aerospace and Electronic Systems
Celestial Mechanics
Automatica

PROFESSIONAL ACTIVITIES

AIAA Guidance, Navigation, and Control Technical Committee, 1995–2000

Program Co-Chair, AIAA Guidance, Navigation, and Control Conference, Boston, MA, August 10–12, 1998

Goddard Senior Fellow, 2000–present

Co-Organizer, The Malcolm D. Shuster Astronautics Symposium, Grand Island, NY, June 12–15, 2005

AWARDS

AAS Dirk Brouwer Award 2005
AIAA Mechanics and Control of Flight Award 1998
AIAA Outstanding Service Award 1997

NASA Exceptional Service Medals 1994, 2005
NASA Group Achievement Awards 1993, 1995, 2002, 2005
NASA Certificate of Recognition 1996
GSFC Moe I. Schneebaum Award for Engineering 1998
GSFC Certificates of Outstanding Performance 1991, 1994
GSFC Performance Awards 1986, 1990–97, 1999, 2000, 2002, 2004
GSFC Special Act Award 2001
GSFC Special Act Group Awards 1991, 1992, 1994, 1996
GSFC Productivity Group Award 1993
GSFC Group Achievement Awards, nine in 1995–2000
GSFC Acquisition Improvement Award 1998

National Science Foundation Graduate Fellowship 1962–66
National Merit Scholarship 1957–61
John McMullin Regional Scholarship 1961–62
Elected to Tau Beta Pi, engineering honorary society

PROFESSIONAL EXPERIENCE

Goddard Space Flight Center, Greenbelt, MD

1998–present, Aerospace Engineer, Guidance Navigation and Control Systems Engineering Branch

Guidance Navigation and Control (GN&C) Systems Engineer for the James Webb Space Telescope (JWST) and the Hubble Space Telescope (HST). Member of the GN&C Technical Discipline Team of NASA's Engineering Safety Center. Senior Controls Analyst on the New Millennium ST-7 Program and disturbance reduction system lead for the Laser Interferometer for Space Astronomy (LISA). Provide GN&C leadership for Medium-Class Explorer (MIDEX) and Small Explorer (SMEX) proposals. Principal Investigator of "Vision-Based Navigation for Spacecraft Formation Flying" under the Cross-Enterprise Technology Development Program. Serve on NASA Independent Assessment Teams. Member of the Standing Review Board for the Landsat Data Continuity Mission. Conduct independent research I in optimal estimation and control. Advised a National Research Council (NRC) Resident Research Associate (RRA) and three visiting faculty. Strategic Investment Champion for Distributed Observing Systems and Constellations.

1994–1998, Staff Engineer, Guidance and Control Branch

Supported the development of control systems for the Tropical Rainfall Measuring Mission (TRMM), Rossi X-Ray Timing Explorer (RXTE), HST, and Microwave Anisotropy Probe (MAP) spacecraft. Served as GN&C lead in the Integrated Mission Design Center and on the proposal teams for MIDEX and SMEX missions, including the successful MAP proposal. Served on external review panels for various NASA programs. Conducted independent research in optimal estimation and control and advised three NRC RRAs.

1990–1994, Assistant Head, Guidance and Control Branch

Led a government/ contractor team developing a gyroless safemode control law for the HST. Supported controls systems development for the TRMM, RXTE, and Solar Anomalous and Magnetospheric Particle Explorer (SAMPEX) spacecraft. Proposed a contingency mode attitude determination system using magnetometers and gyros that was adopted by TRMM, avoiding the expense and complexity of adding star trackers to the spacecraft. Developed the attitude control strategy for orbital reboost of the Compton Gamma Ray Observatory (GRO).

1989–1990, Head, Control System Software and Simulation Section

Directed the development of control laws and flight software for SAMPEX. Directed research in dynamics modeling techniques for robotics and spacecraft applications.

1988–89, Aerospace Engineer, Flight Dynamics Analysis Branch

Investigated advanced mathematical techniques for flight dynamics systems. Contributed to the development of the Upper Atmosphere Research Satellite (UARS) Dynamic Simulator. Advised an NRC RRA.

1986–88, Head, Mathematical Analysis Section

Directed the development of flight dynamics software systems including the Attitude Determination Error Analysis System (ADEAS) and the Mission Analysis Experiment with Expert Systems Technology (MAEWEST). Coordinated the conversion of Flight Dynamics Facility software systems to the 1984 IAU coordinate frame.

1985–86, Aerospace Engineer, Flight Dynamics Analysis Branch

Validated algorithms, software, and procedures for HST support. Managed a research program in Flight Dynamics Technology, including a study of orbit determination automation and a flight experiment to validate the use of one- way Doppler tracking for orbit determination. Developed and presented an in-house course on spacecraft attitude dynamics, estimation, control, and simulation

1978–85, Naval Research Laboratory, Washington, DC, Research Physicist

1974–78, Computer Sciences Corporation, Silver Spring, MD, Technical Staff

1968–74, Williams College, Williamstown, MA, Assistant Professor of Physics

1967–68, University of Maryland, College Park, MD, NSF Postdoctoral Fellow

SERVICE ON Ph.D ADVISORY COMMITTEES

Arthur Kyle, George Mason University, Fairfax, VA, 1995
Thomas Bak, Aalborg University, Aalborg, Denmark, 1999
Jared Madsen, University of Texas, Austin, TX, 2003
Julie Thienel, University of Maryland, College Park, MD, 2004
G Nagendra Rao, Indian Institute of Science, Bangalore, India, 2005
Richard Luquette, University of Maryland, College Park, MD, 2006
James Valpiani, University of Surrey, Guildford, Surrey, UK, 2007