CURRICULUM VITAE

JOHN EUELL COCHRAN, JR.

Current Position:	Professor Emeritus Department of Aerospace Engineering Auburn University
Business Address:	Department of Aerospace Engineering 211 Davis Hall Auburn University, AL 36849-5338
Telephone and e-mail:	334-844-6815 (office) 334-332-0412 (cell) cochrjo@auburn.edu
Fax:	334-844-6803

AREAS OF SPECIALIZATION

Dynamics and Control generally; Guidance, Dynamics, and Stability and Control of Aircraft, Missiles, Spacecraft, and Ground Vehicles; Orbital Mechanics; Flexible Spacecraft Attitude Dynamics and Control; Simulation of Aircraft, Missiles, Spacecraft, and Ground Vehicles; Engineering Law; Product Liability; Intellectual Property

EDUCATIONAL BACKGROUND

J.D., Jones School of Law
Ph.D., Aerospace Engineering, University of Texas at Austin, NSF Fellow
M.S., Aerospace Engineering, Auburn University, Tau Beta Pi Fellow, NCAA Fellow
B.A.E., Aerospace Engineering (With Highest Honor), Auburn University

LICENSES

Attorney at Law, Alabama, 1977-present.
Registered Professional Engineer, 1974-present, Reg. No. 10266 (Alabama).
Private Pilot (single-engine land) 1967, Cert. No. 1828878.

ACADEMIC EXPERIENCE

Professor Emeritus, Department of Aerospace Engineering, Auburn University, 2013-present.
Professor and Head, Department of Aerospace Engineering, Auburn University, 1993-2013.
Professor and Interim Head, Department of Aerospace Engineering, Auburn University, 1992-93.
Professor, Department of Aerospace Engineering, Auburn University, 1981-92.
Alumni Professor, Department of Aerospace Engineering, Auburn University, 1980-81.
Alumni Associate Professor, Department of Aerospace Engineering, Auburn University, 1978-80.
Associate Professor, Department of Aerospace Engineering, Auburn University, 1975-78.
Visiting Associate Professor, Department of Engineering Science and Systems, University of Virginia, 1975 (Spring Semester).
Assistant Professor, Department of Aerospace Engineering, Auburn University, 1970-75. Tenured, 1972. Graduate Faculty, 1973.
Instructor, Department of Aerospace Engineering, Auburn University, 1967-68 and 1969-70.

ADMINISTRATIVE EXPERIENCE

Department Head, Department of Aerospace Engineering, Auburn University, 1993-2013.
Interim Department Head, Department of Aerospace Engineering, Auburn University, 1992-93.
Associate Director of Athletics, Auburn University, 1981-84.

INDUSTRIAL-GOVERNMENT EXPERIENCE

President and Chief Executive Officer, Eaglemark, Inc., 1984-present.
Research Engineer, U.S. Army MIRADCOM, Huntsville, AL, under the U.S. Army's LRCP, Summers of 1974 and 1976.
Research Engineer, NASA/ASEE Summer Faculty Fellowship Program, MSFC, Huntsville, AL, Summers of 1970 and 1971.
Engineering Assistant, Northrop Services, Inc., Huntsville, AL, Summer of 1965.
Student Trainee - Engineering, Marshall Space Flight Center, Summer of 1964.

CONSULTING EXPERIENCE

(The following is a sample of my consulting experience. Additional information is available upon request.)

- Eaglemark, Inc., Auburn, AL, 1984-present, President and Program Manager (Short Course for NASA MSFC, "Spacecraft Attitude Dynamics, Determination, and Control;" Vehicle Rollover Dynamics; Ground-to-Air Missile Guidance; Helicopter Modifications; Design of Target Aircraft; Stability and Control Analysis; Dynamics of Spinning Flexible Missiles).
- Dennis Potts, Honolulu, HI (Segway Accident Analysis).
- Slack & Davis, Austin, TX (Aircraft Performance; Military Helicopter Accident; Expert Witness).
- Freidberg and Parker, L.L.P., Sacramento, CA, (Helicopter Accident Analysis).
- Richard A. Love, Los Angeles, CA, (Segway Accident Analysis, Expert Witness).
- London and Kelly, Austin, TX, (Aircraft Accident Analysis, Reconstruction and Expert Witness).
- Department of Justice, (Patent Infringement, Expert Witness).
- Finnegan, Henderson, Farabow, Garrett & Dunner, LLP, (Patent Infringement, Expert Witness).
- Jamail & Kolius, Houston, TX, (Helicopter Accident Analysis and Reconstruction, Expert Witness).
- Control Dynamics, Huntsville, AL, (Launch Vehicle Guidance).
- Sigmatech, Inc., Huntsville, AL, (Spacecraft Rendezvous and Docking).
- SRS Technologies, Huntsville, AL, (Helicopter Performance; Ground-to-air Missile Simulation).
- Insouth Microsystems, Inc., Auburn, AL, (Dynamics Consultant).
- Cooper & Cooper, Baton Rouge, LA (Aircraft Accident Analysis, Reconstruction, and Expert Witness).
- NASA, Marshall Space Flight Center, Huntsville, AL, (Skylab Attitude Dynamics).
- U.S. Army Missile Command, Redstone Arsenal, AL, (Missile Launcher Dynamics).

SPONSORED RESEARCH EXPERIENCE

Co-Principal Investigator, Project to Evaluate Future Rotary Wing Vehicle Concepts Using Optimization Based Trade Studies, AMRDEC System Simulation and Development Directorate, US Army, Redstone Arsenal, Huntsville, AL, April 2009-March 2010.
Principal Investigator, Project to Develop a Missile and Aircraft Hardware-in-the-Loop System Simulation Laboratory at Auburn University, U. S. Army Aviation and Missile Research, Engineering, and Development Center, Redstone Arsenal, AL, August 2006-December 2008.
Co-principal investigator, Project to model and simulate large aircraft towing small flight vehicle, subcontract to Support Systems Associates, Inc. for U.S. Air Force Special Operations Forces, Robins AFB, GA, October 2003-March 2005.
Principal Investigator, Project to develop a Ground Intermodal Traffic Control Laboratory at Auburn University in collaboration with the National Aviation and Transportation Center of Dowling College, Federal appropriation through the Federal Highway Administration, November 1999-May 2003.
Principal Investigator, Project to develop Finite Element and Multibody Models for MH53J Main Rotor Head, subcontract to Support Systems Associates, Inc. for U.S. Air Force Special Operations Forces, Robins AFB, GA, October 1997-March 1999.
Co-Principal Investigator, Project to Investigate the Orbital Dynamics of Tethered Satellite Systems, Air Force Office of Scientific Research, September 1997- September 2000.
Principal Investigator, Project to develop a Flexible Multibody Dynamics Model for the Kompsat Satellite Ground-Based Simulation, Electronics and Telecommunications Research Institute, Taejon, South Korea, September 1997-March 1999.

Principal Investigator, Project to develop a Flexible Multibody Dynamics Model for the Koreasat Satellite Ground-Based Simulation, Electronics and Telecommunications Research Institute, Taejon, South Korea, July 1996-February 1997.

Principal Investigator, Project for additional work on the Aerodynamic Control of Large Launch Vehicles, NASA, Marshall Space Flight Center, Contract NAS8- 39131-DO27, January 1994-December 1994.

Principal Investigator, Project for the Revision of Multi-body Missile Launcher Dynamics Simulation Code, Contract ARMY-DAAH01-93P-R022, May 1993-September 1993.

Principal Investigator, Project on Dynamics of Structures in a Reduced Gravity Environment, NASA, Marshall Space Flight Center, Contract NAS8-39131-DO20, March 1993-June 1993.

Principal Investigator, Project on Aerodynamic Control of Large Launch Vehicles, NASA, Marshall Space Flight Center, Contract NAS8-39131-DO15, December 1992-August 1993.

Principal Investigator, Project on Missile/Launcher Simulation for U.S. Army Missile Command through Nichols Research Corporation, NRC TM 92-0016, DAAHO1- 89-D-0044, March 1992-September 1992.

Co-Principal Investigator, Project for Hayes Targets Division of PEMCO, Modeling, simulation, control system design and analysis of maneuverable towed targets, January 1989-September 1991.

Principal Investigator, Projects concerning dynamics and control of large flexible space platforms and the effects of generating and utilizing large amounts of power in space for the Auburn University Space Power Institute, Contract DNAOO1-C- 0183, with the Defense Nuclear Agency, January 1986-December 1989.

Principal Investigator, Project for Eglin AFB Armament Laboratory concerning guidance of exoatmospheric interceptors. Funded by Eglin AFB through Auburn University Space Power Institute, Contract DNA001-85-C-0183, with the Defense Nuclear Agency, April 1986-December 1989.

Co-Principal Investigator, NASA Grants NASG-532 and NASG-647, dealing with the determination of damping characteristics of wire rope vibration isolators, June 1985-December 1988.

Principal Investigator, NASA Contract NAS8-36470, dealing with modeling attitude motion of disabled spacecraft, April 1985-September 1986.

Principal Investigator, U.S. Army Contract DAAHO1-83-P-1316, dealing with the effects of rocket flexibility on accuracy, January 1983-May 1983.

Principal Investigator, U.S. Army Contract DAAHO1-82-P-1729, for the purpose of developing and conducting workshop on free rocket/launcher dynamic modeling and simulation, April 1982-September 1982.

Principal Investigator, U.S. Army Contract DAAHO1-80-C-0523, dealing with free rocket/launcher dynamics and design, February 1980-December 1982.

Principal Investigator, U.S. Army Contract DAAK40-78-C-0030, dealing with the effects of flexibility on free rocket accuracy, December 1978-December 1979.

Principal Investigator, U.S. Army Contract DAAK40-77-C-0125, dealing with free rocket/launcher dynamic modeling and simulations, June 1977-September 1978.

Co-Principal Investigator, U.S. Army Contract DAAG60-75-0045, dealing with nuclear blast penetration and fly-through, June 1976-September 1977.

Co-Principal Investigator, U.S. Army Grant DAAG29-76-G-0069, dealing with simulation of a short-range air defense system rocket before radar acquisition, October 1975-March 1977.

Principal Investigator, U.S. Army Grant DAHC04-75-0034, dealing with dynamic modeling of rocket launching systems, October 1974-December 1975.

Investigator, Navy Contract, Automatic Landing Systems Design, 1973-75.

Investigator, NASA Contract, Spacecraft Guidance and Rotational State Determination of Celestial Bodies, 1974-75.

Investigator, Army Contract, Stability and Control of Missiles Penetrating Blast Waves, 1973.

Principal Investigator, NASA Contract, Dynamic Analysis of Spacecraft, 1972-73.

Investigator, NASA Contract, study of the feasibility of using a rotating gravitational gradiometer as a means of detection and measuring of mass anomalies in the earth and/or celestial bodies, 1970-71.

Associate Investigator, NASA Contract, study of the rotational motion of artificial satellites using analytical techniques, and NASA grant for study in perturbation theory and the theory of differential equations, 1967-70.

Investigator, Air Force Contract, concerning the application of a new method of general perturbations to study the effects of gravity-gradient torque on the rotational motion of a triaxial rigid satellite, University of Texas at Austin, TX, 1969.

SCIENTIFIC AND PROFESSIONAL ORGANIZATIONS

Memberships

American Institute of Aeronautics and Astronautics (Fellow)
American Astronautical Society (Fellow)
American Society for Engineering Education
American Helicopter Society
Sigma Xi
American Bar Association
Alabama Bar Association
Lee County Bar Association
National Society of Professional Engineers
Alabama Society of Professional Engineers

Involvement

Vice-President, Education, American Astronautical Society, 2006-2007
Editorial Advisory Board, *Aircraft Engineering and Aerospace Technology*, 2002-present. Co-General Chair, AAS/AIAA Space Flight Mechanics Meeting, 1997..
Co-General Chair, AAS/AIAA Space Flight Mechanics Meeting, 1994.
Associate Editor, *Journal of Guidance, Control, and Dynamics*, 1989-92.
Reviewer, AIAA journals, *Journal of the American Astronautical Society*, ASME journals, *Celestial Mechanics*, others, 1972-present.
Session Chairman, numerous AAS and AIAA Conferences and Meetings, 1981-present. Co-General Chair, AIAA/AAS Astrodynamics Specialists Conference, 1989.
Member, Space Flight Mechanics Committee, AAS, 1985-97.

HONORARY SOCIETIES

Phi Kappa Phi
Tau Beta Pi
Sigma Gamma Tau
Omicron Delta Kappa
Phi Eta Sigma

HONORS AND AWARDS

Hermann Oberth Award, Greater Huntsville Section of the AIAA
Outstanding Alumnus, Department of Aerospace Engineering, Auburn University, 2014
Walter Gilbert Award, Auburn University, 2012
Fellow, American Institute of Aeronautics and Astronautics (AIAA), 2005
DeKalb County Sports Hall of Fame, 1998
Fellow, American Astronautical Society (AAS), 1992
Mortar Board Favorite Educator, 1984
Who's Who in America, and other Who's Who listings, 1983-present
Young Engineer of the Year, Alabama Society of Professional Engineers, 1980
Alumni Professorship, 1978-81
American Men and Women in Science, 1978
Outstanding Young Men of America, 1976
Outstanding Engineering Faculty Award, College of Engineering, 1971.
National Science Foundation Post-Graduate Fellow (Ph.D.), 1968.
Tau Beta Pi Fellow, 1966.
NCAA Post-Graduate Fellowship, 1966.
President's Award, 1966.
Cliff Hare Award, 1966.
Outstanding Engineering Graduate, Auburn University College of Engineering, 1966.
National Football Foundation and Hall of Fame, Earl “Red” Blake Scholar Athlete Award, 1965.
Academic All-SEC (Football), 1963, 1964, 1965.

COMMITTEES, COUNCILS, ETC.

UNIVERSITY

Regular:

University Tenure and Promotion Committee, 1991-93.
Faculty (University) Senate, 1989-92.
Faculty Committee on Athletics, 1980-81.
Graduate Council, 1978-81.
University Hearing Committee on Faculty Dismissal, 1975-76.
Student-Faculty Relations Committee, 1972-74.
Research Council, 1971.

Ad hoc:

Ad hoc Committee on NCAA Inquiry, 1978-79, 1980.
Ad hoc Committee on State Science, Engineering and Technology Program, 1978.
Ad hoc Committee on Sports Clubs and the University, 1976-77 (Chairman).
Ad hoc Committee on Goals and Objectives of Auburn University for the 1970's, 1971.

Self-Study:

Standard VII, 1982.
School of Engineering Self-Study, 1972.
Athletic Department Self-Study, 1972.
Southern Association of Colleges and Schools (SACS)
Athletics Self-Study Committee, 2002-2003.

COLLEGE OF ENGINEERING

Research Council, 1991-92.
College Tenure and Promotion Committee, 1989-90.
Engineering Faculty Council, 1976-79; Chairman, 1977-78.
Advisor, Student Engineering Council, 1971-75.
Effective Teaching Institute Committee, 1973-74.

UNIVERSITY COURSES TAUGHT

Dynamics of Flight, Advanced Astrodynamics, Guidance of Aerospace Vehicles, Hypersonic Flight Dynamics, Aerodynamics, Advanced High Speed Viscous Aerodynamics, Astrodynamics I & II, Spacecraft Attitude Dynamics and Control, Optimal Control of Aerospace Vehicles, Helicopter Dynamics and Control, Engineering Law and Ethics, Aircraft Performance, Aircraft Structures, Airplane Static Stability and Control, Airplane Dynamic Stability and Control, Airplane Design, Automatic Stability and Control, Aerospace Systems Analysis, Dynamics, Statics.

SHORT COURSES/SEMINARS TAUGHT

"Spacecraft Attitude Dynamics, Determination, and Control;" multi-day short course for NASA Marshall Space Flight Center personnel, Summer 2015.
"Intermodal Transportation Safety and Security," Director and lecturer, short course as part of a Federal Highway Cooperative Agreement, Gulf Shores, AL, August 15-16, 2002.
"An Introduction to MATLAB and SIMULINK," Co-lecturer, short course for the Missile and Space Intelligence Center, Redstone Arsenal, AL, December 11-15, 2000.
'Review of Dynamics and Aerodynamics of Missiles," Co-lecturer, one-day seminar for the Missile and Space Intelligence Center, Redstone Arsenal, AL, September 28, 2000.
"Protecting the Environment: Legal and Ethical Considerations for Engineers," three-hour videotape presentation, November 30, 1995, available through Auburn University Extension Service.
"Contracts: From Fundamentals to Alternate Dispute Resolution," three-hour videotape presentation, November 28, 1995, available through Auburn University Extension Service.

"Dynamics and Control for Spacecraft Engineering," Lectures (two days) presented at the Electronics and Telecommunications Research Institute, Taejon, South Korea, December 12-16, 1994.
"Topics in Engineering Law & Ethics," Continuing Education Teleseminar for Professional Engineers, three hours live, November 8, 1994.
"The Engineer as Expert Witness," Continuing Education Teleseminar for Professional Engineers, three hours live, November 11, 1993 (with David Hall and Glennon Maples).
"Consulting Ethics for Engineers," Continuing Education Teleseminar for Professional Engineers, three hours live, November 2, 1993.
"Spacecraft Dynamics and Control," Five-day, 4 hr/day short course, NASA, Marshall Space Flight Center, AL, Summer 1992.
"Missile Launcher Dynamics," Three, 4 hr. sessions, U. S. Army Missile Command, Redstone Arsenal, AL, 1983.
"Liability of Safety and Product," Lecturer on Products Liability, Auburn Engineering Extension Short Course, Birmingham, 1978; Fort McClellan, 1979.
"Marine Air Traffic Control and Landing System," Lecturer on Aircraft Dynamics and Control, Auburn, AL, 1973.

REFEREED JOURNAL PUBLICATIONS

Lee, D., Cochran, J., and No, T. (2012). "Robust Position and Attitude Control for Spacecraft Formation Flying." *Journal of Aerospace Engineering*, 25(3), 436–447.

Zallen, H., Cochran, J.E., Jr., and Bailey, J. A., "Head-tilt and pilot fatigue measured by flight simulation," *Aircraft Engineering and Aerospace Technology*, Vol. 84, No. 1, 2012, pp. 51-57.

Dai, R. and Cochran, J.E., Jr., "Path Planning and State Estimation for Unmanned Aerial Vehicles in Hostile Environments," *Journal of Guidance, Control, and Dynamics*, Vol. 33, No. 2, March –April 2010, pp. 595-600.

Dai, Ran and Cochran, J.E., Jr., "Wavelet Collocation Method for Optimal Control Problems," *Journal of Optimization Theory and Applications*, Vol. 143, No. 2, November 2009, pp. 265-278.

Dai, Ran and Cochran, J. E., Jr., "Three-Dimensional Trajectory Optimization in Constrained Airspace," *Journal of Aircraft,* Vol. 46, No. 2, March–April 2009, pp. 627-634.

Bidez, M. W., Cochran, J. E., Jr., King, D., Burke, D. S., III, "Occupant Dynamics in Rollover Crashes: Influence of Roof Deformation and Seat Belt Performance on Probable Spinal Column Injury, *Annals of Biomedical Engineering*, Vol. 35, No. 11, November 2007, pp. 1973–1988.

Lee, D., Cochran, J.E., Jr., Jo, J. H., "Solutions to the Variational Equations for Relative Motion of Satellites," *Journal of Guidance, Control, and Dynamics*, Vol. 30, No. 3, May-June 2007, pp. 669-678.

Kang, Ja-Young and Cochran, J. E., Jr., "Stability Criteria of Slosh Motion with Periodicity in a Spinning Spacecraft," *Journal of Guidance, Control, and Dynamics*, Vol. 28, No. 3, May-June, 2005, pp. 462-467.

Choe, N., Cochran, J. E., Jr., and Jo, J. H., "Detection of Tethered Satellite Systems," *Journal of the Astronautical Sciences*, Vol. 52, Nos. 1 and 2, January - June 2004.

Kang, J-Y, and Cochran, Jr., J. E., Jr., "Resonant Motion of a Spin-Stabilized Thrusting Spacecraft," *Journal of Guidance, Control, and Dynamics*, Vol. 28, No. 3, May-June, 2004, pp. 356-364.

Cochran, J. E., Jr., "Aerospace Education and Research at Auburn University – From the Wright Brothers' Flight School to the Space Station," In McCormick, B., Newberry, C. and Jumper, E., Aerospace Engineering Education During the First Century of Flight, AIAA, 2004.

Lovell, T. A, Cochran, J. E., Jr., Cicci, D. A., and Cho, S., "A study of the re-entry orbit discrepancy involving tethered satellites," *Acta Astronautica*, Vol. 53, 2003, pp. 21-33.

Cho, S. and Cochran, J. E., "Attitude and Configuration Control of Flexible Multi-body Spacecraft," *Journal of Astronomy and Space Sciences*, Vol.19, No.2, 2002.

Cicci, D. A., Cochran, J. E., Jr., Qualls, C., and Lovell, T. A., "Quick-Look Identification and Orbit Determination of a Tethered Satellite," *Journal of the Astronautical Sciences*, Vol. 50, No. 3, July-September 2002.

Cho, S. Lovell, A., Cochran, J. E., Jr., and Cicci, D. A., "Approximate Solutions for Tethered Satellite Motion," *Journal of Guidance, Control, and Dynamics*, Vol. 24, No. 4, July-August, 2001, pp. 746-754.

No, T. S., Cochran, J. E., Jr., Kim, J-K, and Kim, E. G., "A Design Method of Guidance Laws for Bank-To-Turn Missiles," *Journal of Guidance, Control, and Dynamics*, Vol. 24, No. 2, March-April, 2001, pp. 255-260.

Cochran, J. E., Jr., Cho, S., Lovell, T. A., and Cicci, D. A., "Evaluation of the Information Contained in the Motion of One Satellite of a Two-Satellite Tethered System," *Journal of the Astronautical Sciences*, Vol. 48, No. 4, October-December, 2000, pp. 477-493.

Cochran, J. E., Jr., Cho, S., Lovell, T. A., and Cicci, D. A., "Modeling Tethered Satellite Systems for Identification and Orbit Determination," *Journal of the Astronautical Sciences*, Vol. 48, No. 1, January-March 2000, pp. 89-108.

Cochran, J. E., Jr., Cho, S., Cheng, Y-M, and Cicci, D. A., "Dynamics and Orbit Determination of Tethered Satellite Systems," *Journal of the Astronautical Sciences*, Vol. 48, No. 2, April-June 1998, pp. 177-194.

Lee, S. and Cochran, J. E., Jr., "Orbital Maneuvers via Feedback Linearization and Bang-Bang Control," *Journal of Guidance, Control and Dynamics*, Vol. 20, No. 1, January-February, 1997, pp. 104-110.

Kumar, K., Cochran, J. E., Jr., and Cutchins, M. A., "Contact Stresses in Cables Due to Tension and Torsion," *Journal of Applied Mechanics*, Vol. 64, No. 4, December, 1997, pp. 935-939.

Warnock, T. W. and Cochran, J. E., Jr., "Predicting the Orbital Lifetime of Tethered Satellite Systems," *Acta Astronautica*, Vol. 35, No. 2/3, January/February, 1995, pp. 193-203.

No, T. S. and Cochran, J. E., Jr., "Dynamics and Control of a Tethered Flight Vehicle," *Journal of Guidance, Control and Dynamics*, Vol. 18, No. 1, January-February, 1995, pp. 66-72.

Cochran, J. E., Jr., Lee, S., and No, T. S., "Control of Gradual Plane Change During Aerocruise," *Journal of the Astronautical Sciences*, Vol. 42, No. 3, July-September 1994, pp. 285-300.

Jenkins, R. M., Ciucci, A., and Cochran, J. E., Jr., "A Simplified Model for Calculation of Backflow Contamination from Rocket Exhausts in a Vacuum," *Journal of Spacecraft and Rockets*, Vol. 31, No. 2, March-April 1994, pp. 265-270.

Warnock, T. W. and Cochran, J. E., Jr., "Orbital Lifetime of Tethered Satellites," *Journal of the Astronautical Sciences*, Vol. 42, No. 2, April-June 1993, pp. 165-188.

Cochran, J. E., Jr., Innocenti, M., No, T. S., and Thukral, A., "Dynamics and Control of Maneuverable Towed Flight Vehicles," *Journal of Guidance, Control and Dynamics*, Vol. 15, No. 5, September-October 1992, pp. 1245-1252.

Cochran, J. E., Jr., No, T. S., and Thaxton, D. G., "Analytical Solutions to a Guidance Problem," *Journal of Guidance, Control and Dynamics*, Vol. 14, No. 1, January- February 1991, pp. 117-122.

Kumar, K. and Cochran, J. E., Jr., "Analytical Estimation for Static Deformation of Wire Ropes with Fibrous Cores," *Journal of Applied Mechanics*, Vol. 57, December 1990, pp. 1000-1003.

Cochran, J. E., Jr. and Haynes, D. A., "A Constrained Initial Guidance Algorithm," *Journal of Guidance, Control and Dynamics*, Vol. 13, No. 2, March-April 1990, pp. 193-197.

Jenkins, R. M., Cochran, J. E., Jr., and Phelps, K. A., "Dynamics of Particulate Material Ejected from a Rotating Space Platform," *Journal of Guidance, Control and Dynamics*, Vol. 12, No. 6, November-December 1989, pp. 269-270.

Kumar, K. and Cochran, J. E., Jr., "Closed-Form Analysis of Elastic Deformations of Multi-Layered Strands," *Journal of Applied Mechanics*, Vol. 109, December 1987, pp. 898-903.

Winfree, P. K. and Cochran, J. E., Jr., "Nonlinear Attitude Motion of a Dual-Spin Spacecraft Containing Spherical Dampers," *Journal of Guidance, Control and Dynamics*, Vol. 9, No. 6, November-December 1986, pp. 681-690.

Cochran, J. E., Jr. and Shu, P. H., "Effects of Energy Addition and Dissipation on Dual-Spin Spacecraft Attitude Motion," *Journal of Guidance, Control and Dynamics*, Vol. 6, No. 5, September 1983, pp. 368-372.

Cochran, J. E., Jr. and Ho, C. S., "Stability of Aircraft Motion in Critical Cases," *Journal of Guidance, Control and Dynamics*, Vol. 6, No. 4, July-August 1983, pp. 272-279. Also, selected for translation and republication in the Soviet Union in *Aeronautics/Space Technology*, April 1984.

Cochran, J. E., Jr. and Shu, P. H., "Attitude Motion of Spacecraft with Skewed Internal Angular Momenta," *Journal of the Astronautical Sciences*, Vol. XXXI, No. 2, April-June 1983, pp. 203-216.

Cochran, J. E., Jr., Ho, C. S., and Castleberry, G. A., "Stability of Asymmetric Equilibrium Flight States," *Journal of Aircraft*, Vol. 19, No. 9, September 1982, pp. 705-706.

Cochran, J. E., Jr., Shu, P. H., and Rew, S. D., "Attitude Motion of Asymmetric Dual-Spin Spacecraft," *Journal of Guidance and Control*, Vol. 5, No. 1, January- February 1982, pp. 37-42, February 1982, pp. 37-42.

Cochran, J. E., Jr. and Holloway, H. E., "Resonances in Attitude Motions of Asymmetric Dual-Spin Spacecraft with Flexible Appendages," *The Journal of the Astronautical Sciences*, Vol. XXVIII, No. 3, July-September 1980, pp. 231-254.

Cochran, J. E., Jr. and Christensen, D. E., "Free Flight Rocket Attitude Motion Due to Transverse Vibration," *Journal of Spacecraft and Rockets*, Vol. 17, No. 5, September- October 1980, pp. 425-430.

Cochran, J. E., Jr. and Thompson, J. A., "Nutation Dampers vs. Precession Dampers for Asymmetric Spacecraft," *Journal of Guidance and Control*, Vol. 3, No. 1, January-February 1980, pp. 22-28.

Cochran, J. E., Jr. and Beaty, J. R., "Near-Resonant and Transition Attitude Motion of a Class of Dual-Spin Spacecraft," *Journal of the Astronautical Sciences*, Vol. XXVI, No. 1, January-March 1978, pp. 19-45.

Cochran, J. E., Jr., "Nonlinear Resonances in the Attitude Motion of Dual-Spin Spacecraft," *Journal of Spacecraft and Rockets*, Vol. 14, No. 9, September 1977, pp. 562-572.

Cochran, J. E., Jr. and Speakman, N. O., "Rotational Motion of a Free Body Induced by Mass Redistribution," *Journal of Spacecraft and Rockets*, Vol. 12, No. 2, February 1975, pp. 89-95

Cochran, J. E., Jr., "Concerning the Lateral Dynamics of Flight on a Great Circle," *AIAA Journal*, Vol. 12, No. 4, April 1974, pp. 557-558.

Cochran, J. E., Jr., "Effects of Gravity-Gradient Torque on the Rotational Motion of a Triaxial Satellite in a Precessing Elliptical Orbit," *Celestial Mechanics*, Vol. 6, No. 4, September 1972, pp. 127-150.

Cochran, J. E., Jr., "Rotational Equations of Motion of a Triaxial Rigid Body," *AIAA Journal*, Vol. 9, No. 6, June 1971, pp. 1195-1197.

Szebehely, V. G., Ingram, D. S., and Cochran, J. E., Jr. "Mean Motions and Characteristic Exponents at the Libration Points," *The Astronomical Journal*, Vol. 75, No. 1, February 1970, pp. 92-95.

BOOKS

Spaceflight Mechanics 1997, Vol. 95, Advances in the Astronautical Sciences (two parts), Eds. K. A. Howell, D. A. Cicci, J. E. Cochran, Jr., and T. S. Kelso, 1997, 1150p.

Spaceflight Mechanics 1994, Vol. 87, Advances in the Astronautical Sciences (two parts), Eds. J. E. Cochran, Jr., C. D. Edwards, Jr., S. J. Hoffman, R. Holdaway, 1994, 1272p.

CONFERENCE PAPERS AND PRESENTATIONS

Cochran, J. E., Jr., and Walsh, T. B., "Effects of the Rotational Motion of Debris Objects on the Prediction of Their Orbital Motions," AAS 13-848, AAS/AIAA Astrodynamics Specialist Conference, August 11-15, 2013, Hilton Head, SC.

Sherrill, R. E., Andrew J. Sinclair, A. J., and Cochran, J. E., Jr., "Scene Generation and Target Detection Development for HWIL Simulation," AIAA Modeling and Simulation Technologies Conference, 18-21 August 2008, Honolulu, HI.

Martin, J. N., Sinclair, A. J., and Cochran, J. E., Jr., "Dynamic-Inversion Control for Flight Motion Simulators in the Presence of Model Perturbations," AIAA Modeling and Simulation Technologies Conference, 18-21 August 2008, Honolulu, HI.

Martin, J. N., Sinclair, A. J., and Cochran, J. E., Jr., "Nonlinear Tracking of Natural Mechanical Systems for HWIL Simulation," AIAA 2007-6463, AIAA Modeling and Simulation Technologies Conference and Exhibit, 20-23 August, 2007, Hilton Head, SC.

Dai, R. and Cochran, J. E., Jr., "Three-Dimensional Minimum-Time-To-Climb in Constrained Airspace," AIAA 2007-1055, 45th AIAA Aerospace Sciences Meeting and Exhibit, January 2007, Reno, Nevada.

Cochran, J. E., Jr., Lee, D., and Jo, J. H., "Solutions to the Variational Equations of Relative Motion of Satellites," AAS 05-294, AAS/AIAA Astrodynamics Specialists Conference, Lake Tahoe, CA, August 7-11, 2005.

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