

## ROBERT M. MCKILLIP, JR.

Dr. Robert M. McKillip, Jr. is a Senior Associate with Continuum Dynamics, Inc. (CDI) in Ewing, New Jersey, where he has been since 1992. Dr. McKillip received both Ph.D. and S.M. degrees from Massachusetts Institute of Technology in 1984 and 1980, respectively, and he received a B.S.E. degree from Princeton University in 1978. Prior to joining CDI, Dr. McKillip he served as an Assistant Professor with the Department of Mechanical and Aerospace Engineering at Princeton University, Princeton, New Jersey from 1984 to 1992.

Dr. McKillip's professional interests and expertise are in rotor system instrumentation and parameter identification, active vibration control, shape memory alloy actuator applications, and flight dynamics and control. He has conducted both experimental and theoretical research in these areas at CDI and at the Rotorcraft Dynamics Laboratory on Princeton's Forrestal campus. He has been principal investigator on several Department of Defense sponsored projects that include: simulation software development for supporting dynamic interface flight test predictions; the development of an on-blade active tab device for automatic in-flight helicopter blade tracking; the design of a system for on-blade helicopter rotor measurements; an algorithmic identification approach for detecting icing on the V-22 Osprey tiltrotor; and a hybrid software/hardware controller for advanced ejection seat control. Dr. McKillip has consulted for the Boeing Helicopter Company, the U.S. Navy, the U.S. Army, and NASA, as well as private engineering research organizations. He is a past member of the Airborne Systems Panel for the National Research Council's Strategic Technologies for the Army (STAR-21) Study Committee, and is a former member of the Handling Qualities technical committee and current member of the Simulation technical committee for the American Helicopter Society. He has been a regular lecturer on rotorcraft stability and control for several helicopter engineering short courses. He is a senior member of AIAA and a member of American Helicopter Society and IEEE. He holds a private pilot certificate, and has constructed a homebuilt Bensen Gyrocopter.

### Selected Publications

1. "Aircraft Icing Detection System," U.S. Patent No. 6,304,194, Oct. 16, 2001.
2. "Actuating Device with Multiple Stable Positions," U.S. Patent No. 6,220,550, April 24, 2001.
3. "Remotely Controllable Actuating Device," U.S. Patent No. 5,752,672, May 19, 1998.
4. "Dynamic Interface Simulation using a Coupled Vortex-Based Ship Airwake and Rotor Wake Model," American Helicopter Society 58<sup>th</sup> Annual Forum, Montreal, Canada, June 2002 (with A. Boschitsch, T. Quackenbush, J. Keller, and D. Wachspress).
5. "A Novel Instrumentation System for Measurement of Helicopter Rotor Motion and Loads Data," American Helicopter Society 58<sup>th</sup> Annual Forum, Montreal, Canada, June 2002.
6. "Design and Control Strategies Using Smart Structures Technology for Rotorcraft Performance Enhancement," Proceedings of the Fifth AIAA/USAF/NASA/ISSMO Symposium on Multidisciplinary Analysis and Optimization, September 1994 (with T. Quackenbush).
7. "Helicopter Flight Control System Design and Evaluation using Controller Inversion Techniques," *Journal of the American Helicopter Society*, January 1992.

8. "Periodic Model-Following for the Control-Configured Helicopter," *Journal of the American Helicopter Society*, July 1991.
9. "Kinematic Observers for Active Control of Helicopter Vibration," *Vertica*, Vol.12, (1/2), 1988.
10. "Experimental Studies in System Identification of Helicopter Rotor Dynamics," *Vertica*, Vol. 12, (4), 1988.
11. "Periodic Control of the Individual-Blade-Control Helicopter Rotor," *Vertica*, Vol. 9, (2), 1985.