# Foreword

*Modeling and Simulation of Aerospace Vehicle Dynamics* by Peter H. Zipfel is an excellent introduction to the important subject of computer modeling and simulation of dynamics of aerospace vehicles that in recent years has evolved into a major discipline. This new discipline is used not only in the design process but also in the development and improvement of performance and operation of civil and military aircraft and missiles. The text is divided into two parts: Part 1 Modeling of Flight Dynamics and Part 2 Simulation of Aerospace Vehicles. Part 1 discusses the theoretical concepts that provide mathematical foundation for the simulation of aerospace systems. This includes frames of reference and coordinate systems, kinematics of translation and rotation, translational and attitude dynamics, as well as perturbation techniques used for modeling. In Part 2 the author describes in great detail the various types of simulations for aerospace vehicles for three-, five-, and six-degree-of-freedom systems, including real-time simulators.

Many of the AIAA Education Series texts include now either CDs or diskettes for computer programs, problem exercises, and any additional information. This author has introduced a novel approach of providing an Internet service for distributing such materials directly. This additional material for the present text can be obtained from the CADAC Web site, which can be accessed through the AIAA home page (www.aiaa.org) by selecting Market Pulse and then Web Links, where CADAC is listed. The advantage of this approach is obvious: it proves to be an easy avenue for disseminating any future new or updated materials (e.g., new classroom problems for the basic text). In writing this text, the author drew on his many years of experience as an educator at the University of Florida and as a research scientist with the U.S. Army and Air Force. This experience allowed him to produce an outstanding teaching text and a practical reference book on modeling and simulation of aerospace vehicles.

The AIAA Education Series of textbooks and monographs, inaugurated in 1984, embraces a broad spectrum of theory and application of different disciplines in aeronautics and astronautics, including aerospace design practice. The series also includes texts on defense science, engineering, and management. The books serve both as teaching texts for students and reference materials for practicing engineers, scientists, and managers. The complete list of textbooks published in the series (over 60 titles) can be found on the end pages of this volume.

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