



Dynamics of Multibody Systems

By Ahmed A. Shabana

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This enhanced fourth edition of Dynamics of Multibody Systems includes an additional chapter that provides explanations of some of the fundamental issues addressed in the book, as well as new detailed derivations of some important problems. Many common mechanisms such as automobiles, space structures, robots and micromachines have mechanical and structural systems that consist of interconnected rigid and deformable components. The dynamics of these large-scale multibody systems are highly nonlinear, presenting complex problems that in most cases can only be solved with computer-based techniques. The book begins with a review of the basic ideas of kinematics and the dynamics of rigid and deformable bodies before moving on to more advanced topics and computer implementation. The book's wealth of examples and practical applications will be useful to graduate students, researchers and practising engineers working on a wide variety of flexible multibody systems.

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Editorial Review

About the Author

Ahmed Shabana is the Richard and Loan Hill Professor in the Mechanical and Industrial Engineering Department at the University of Illinois, Chicago's College of Engineering. He received his Ph.D. from the University of Iowa in 1982 and worked as a postdoctoral Fellow there before joining UIC in fall 1983. He is internationally known for his research contributions in the areas of large-scale computations as applied to dynamic and multibody systems such as vehicles, machines and robots. Shabana is the author of four books and has published more than 260 papers including 130 journal papers and 130 conference papers, presentations, and technical reports. He has maintained a steady stream of research funding (a total of \$3.5 million) from the Federal Railroad Administration, Army Research Office and National Science Foundation, as well as other agencies and companies. In addition, Shabana has supervised the work of 31 PhD students, 30 MS students, and 26 visiting scholars and postdoctoral fellows. He is a Fellow of the American Society of Mechanical Engineers (ASME) and is the Founding Chair of the ASME Technical Committee on Multi-Body Systems and Nonlinear Dynamics. He has served on the editorial board of several journals and as a member of several national and international committees. Shabana has received several awards, which include an Honorary Doctorate degree from Lappeenranta University of Technology (Finland), the Fulbright Research Scholar Award and the Humboldt Prize.

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