UCI Samueli School of Engineering

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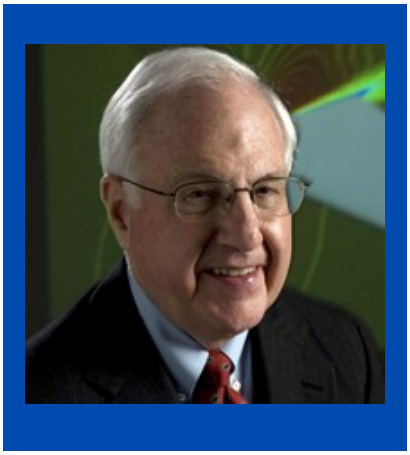

Adventures in Reduced Order Modeling

Earl H. Dowell
William Holland Hall Professor, Duke University

Date: Friday, March. 15th, 2024
Time: 4:30 to 5:30 p.m.
Location: UCI CALIT2 Building Auditorium
Reception to follow

RSVP Here

Please respond by March 12th, 2024

Abstract: Reduced order models (ROM) have captured the interest and effort of many investigators over the years. As is well known the cost of computation can easily outpace the available computational resources, especially for multidisciplinary mathematical/computational models. The presentation is a personal account of one investigator's journey, enabled by substantial contributions from colleagues in several organizations over the years. It is intended to be an account of key ideas as seen from a single perspective. By a reduced order model is meant a model that provides a substantial reduction in the size and cost of the original computational model without any essential loss in accuracy. And the motivation for creating such a ROM is not only to reduce computational cost. By extracting the essential elements of a more elaborate model, a much wider range of parameters in the model may be studied and the interpretation of the results may be made easier, thereby advancing our understanding of the model and the physical phenomena it is intended to describe.

Biography: Dr. Dowell is an elected member of the National Academy of Engineering, an Honorary Fellow of the American Institute of Aeronautics and Astronautics (AIAA) and a Fellow of the American Academy of Mechanics and the American Society of Mechanical Engineers. He has also served as Vice President for Publications and member of the Executive Committee of the Board of Directors of the AIAA; as a member of the United States Air Force Scientific Advisory Board; the Air Force Studies Board, the Aerospace Science and Engineering Board and the Board on Army Science and Technology of the National Academies; the AGARD (NATO) advisory panel for aerospace engineering, as President of the American Academy of Mechanics, as Chair of the US National Committee on Theoretical and Applied Mechanics and as Chairman of the National Council of Deans of Engineering. From the AIAA he has received the Structure, Structural Dynamics and Materials Award, the Von Karman Lectureship, the Crichlow Trust Prize and the Reed Aeronautics Award; from the ASME he has received the Spirit of St. Louis Medal, the Den Hartog Award, Lyapunov Medal and the Caughey Medal; and he has also received the Guggenheim Medal which is awarded jointly by the AIAA, ASME, AHS and SAE.

He has served on the boards of visitors of several universities and is a consultant to government, industry and universities in science and technology policy and engineering education as well as on the topics of his research. Dr. Dowell's research and teaching ranges over the topics of acoustics, aerodynamics, aeroelasticity, dynamics and structures. In addition to being author of over four hundred research articles, Dr. Dowell is the author or co-author of four books, "Aeroelasticity of Plates and Shells", "A Modern Course in Aeroelasticity", "Studies in Nonlinear Aeroelasticity" and "Dynamics of Very High Dimensional Systems".

Dr. Dowell received his B.S. degree from the University of Illinois and his S.M. and Sc.D. degrees from the Massachusetts Institute of Technology. Before coming to Duke as Dean of the School of Engineering, serving from 1983-1999, he taught at M.I.T. and Princeton. He has also worked with the Boeing Company.