Analysis vs Simulation or Brains vs Computers
Thursday, September 7, 2017 | 4:00 p.m. | 202 Reed McDonald

Abstract
The significant advances in computational technology now allow us to perform detailed simulations of complex systems. Accompanying this advancement has been a reduction in the cost of developing many systems. Many wind tunnels have been shut down due to the advances in CFD and aircraft simulators/emulators have reduced the cockpit training time for pilots. Our students can now solve in much more complex problems in class and in their theses. A down side of this development has been the trend total reliance on simulations and not doing the analytical work and developing approximate analytic solutions to problems. There approximate analytical solutions can provide a lot of insight into the physics of the problems and help drive the complex simulations. Parameter sensitivity studies can often be performed using these analytical solutions and decrease the simulation costs. In this seminar the value of approximate analytical solutions to complex problems will be demonstrated with three examples.

Dr. Terry Alfriend is currently the TEES Distinguished Research Chair Professor of Aerospace Engineering at Texas A&M University and a University Distinguished Professor. He has over 40 years of diverse experience in the aerospace business that includes research, development and management in the private sector, government, and academia. He is a member of the NAE, an Honorary Fellow of the AAS and AIAA and a member of the International Academy of Astronautics. He has served as an Associate Editor and Editor-in-Chief of both the AAS Journal of the Astronautical Sciences and the AIAA Journal of Guidance, Control and Dynamics. He is also the recipient of the AAS Dirk Brouwer Award, the AIAA Mechanics and Control of Flight Award and the AIAA Guidance, Navigation and Control of Flight Award. In 2007 he was selected to give the Von Karman lecture at the 2008 Israel Aerospace Sciences Conference and in 2015 the IAC John Breakwell lecture. His research interests are in space surveillance, astrodynamics, satellite attitude dynamics and control and spacecraft design.

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Refreshments served at 3:45 p.m.