

Sept 18, 2025

On the Challenges for Science in Engineering Wind Tunnels

Time: 2:30 - 4:00 PM
Location: CBB 104



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ABSTRACT:

Wind tunnels designed for scientific experiments are quite different than those used for engineering test and evaluation. Size, flow quality, and operating cost are obvious differences. The differences in mindset and culture of the operators are just as important and these can impede successful scientific tests in large-scale facilities. This talk will give examples of boundary-layer transition and other "science" experiments in a 7 ft x 10 ft engineering wind tunnel and describe how various challenges can be overcome. The opportunity for emerging engineering testing practices for uncertainty quantification to improve scientific testing in dedicated science facilities will also be discussed.

BIOGRAPHY:

Edward White is a Professor and Department Head of Mechanical Engineering at the University of Texas at Dallas. The department includes 44 faculty members and nearly 1200 students at the undergraduate, masters, and doctoral levels. Prof. White's research focuses on wind-tunnel experiments on boundary-layer stability, laminar-to-turbulent transition, and a variety of areas in applied aerodynamics. His work has been funded by grants from the U.S. Air Force, NASA, the National Science Foundation, Sandia National Laboratory, and various companies. He has supervised the research of over 30 M.S. and Ph.D. students. Prof. White teaches undergraduate and graduate courses in aerodynamics, fluid dynamics, aerodynamic design, and experimental techniques. He is an Associate Fellow of the American Institute of Aeronautics and Astronautics and was the Technical Chair of its 2011 Fluid Dynamics Conference.

Before his appointment at UTD, Prof. White taught for 17 years in the Department of Aerospace Engineering at Texas A&M University where he served both as Associate Department Head and as the Director of the Oran W. Nicks Low-Speed Wind Tunnel and the Klebanoff-Saric Wind Tunnel. Prof. White joined TAMU in 2007 after seven years as an Assistant and Associate professor at Case Western Reserve University (CWRU).

Prof. White received his Ph.D. in Aerospace Engineering from Arizona State University where he was involved in the swept-wing transition, stability and control studies. His M.S. and B.S. degrees are from CWRU in Mechanical Engineering and Aerospace Engineering.