JOHNS HOPKINS
Center for Environmental
& Applied Fluid Mechanics

Friday, April 6, 2018
3:00 PM, 132 Gilman Hall

"*Wind Turbines, Trailing Edge Noise, Aeroacoustic Testing and Owls*"
Presented by Prof. William Devenport
Virginia Polytechnic Institute and State University

Abstract: This seminar will address the question of how we can study aeroacoustics of wind turbine blades under controlled laboratory conditions, with a specific focus on trailing edge noise and its control. The Stability Wind Tunnel at Virginia Tech - a combined commercial, research and educational tunnel and a leading faculty for the study of wind turbine blade aeroacoustics - will be described. Recent research activities in the facility have included the study of new surface treatments for the reduction of trailing edge noise, inspired by the anatomy of silent flying owls. Experiments on these surface treatments will be described, along with an attempt to apply them to a full scale wind turbine in the field.

Bio: William Devenport is a Professor of Aerospace Engineering at Virginia Tech. He serves as Director of the Virginia Tech Stability Wind Tunnel and Director of the Center for Renewable Energy and Aerodynamic Technology. His research is in experimental aerodynamics and aeroacoustics, with contributions in areas such as roughness noise and control, turbulence ingestion noise, rotor aeroacoustics, leading and trailing edge noise and control, tip vortex and tip leakage vortex wakes and high Reynolds number rough wall boundary layers. In particular, he spearheaded the invention of the hybrid aeroacoustic wind tunnel, an innovation that has been adopted at facilities in the US, Japan, China, and Denmark. He leads an active and diverse research group (currently including 4 undergraduate researchers, 5 PhD students and 3 research faculty). His over 200 refereed publications include articles in the Journal of Fluid Mechanics, AIAA Journal, Journal of Sound and Vibration, Annual Reviews of Fluid Mechanics as well as a textbook on aeroacoustics, co-authored with Stewart Glegg.