AAE FALL COLLOQUIUM SERIES

Wing-gust encounters: Flow measurement and modeling for gust response mitigation

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3:30PM-4:20PM WALC 1121

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Abstract:
The long term goal of studying wing-gust encounters is to develop new ways to mitigate or exploit the response of the wing to a gust encounter. Large flow disturbances tend to give rise to large transients in forces and moments on a lifting surface. These can be detrimental to controlled flight, and thus it is of interest to sense and react to these flows. Experiments were performed in a water-filled towing tank to measure the forces, flow fields, and pressures surrounding swept and rectangular wings passing through a strong transverse gust. These data are used to better understand force production on the wings and explore methods of applying control via wing pitch to regularize the resulting lift history.

Biography
Anya Jones is a Professor in the Department of Mechanical and Aerospace Engineering at the University of California, Los Angeles. She received her Ph.D. in Engineering (experimental aerodynamics) from the University of Cambridge, her S.M. in Aeronautics and Astronautics from MIT, and her B.S. in Aeronautical and Mechanical Engineering from Rensselaer Polytechnic Institute. Her research is focused on the experimental fluid dynamics of unsteady and separated flows. Current and recent work has focused on wing performance in large-amplitude gust encounters, separated and reverse flow rotor aerodynamics, and flight through wakes and other unsteady environments. Dr. Jones has been awarded the AFOSR Young Investigator Award, NSF CAREER Award, and the Presidential Early Career Award for Scientists and Engineers (PECASE). She has also been awarded a Fulbright Scholar Award to work at the Technion in Haifa, Israel, and an Alexander von Humboldt Research Fellowship to TU Braunschweig in Germany. She has been an active participant of several NATO Science & Technology Organization task groups on unsteady aerodynamics and is a fellow of the American Physical Society, Division of Fluid Dynamics (APS DFD) and an Associate Fellow of the American Institute of Aeronautics and Astronautics (AIAA).

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