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AIAA The World's Forum for Aerospace Leadership

Clarkson University Student Joshua Bulter Wins AIAA Abe Zarem Award

Joshua Butler, a graduate student in the Department of Mechanical and Aeronautical Engineering, has been awarded the American Institute of Aeronautics and Astronautics (AIAA) Abe M. Zarem Award for Distinguished Achievement, for his paper "A Study of Shear Layer Sub-Structures in Leading Edge Vortices Using Laser Doppler Velocimetry". As a recipient of this award, he will attend the 26th International Council of Aeronautical Sciences Congress in Anchorage, Alaska in September 2008 to present his work. He will also be honored at the annual Aerospace Sciences Meeting (ASM) next January in Orlando, FL.

The Zarem Graduate Student Awards have been established by the AIAA and Dr. Abe Zarem as a means for students pursuing advance degrees in aeronautics and astronautics to showcase their talent and work. The purpose of the award is to identify talented students and to motivate and encourage more students to seek advanced degrees in these areas.

The identified master's level winner in each area, one in aeronautics and one in astronautics, each receives a distinctive medal and a certificate as recognition of their technical excellence at the national AIAA Aerospace Sciences Meeting (ASM). Additionally, the student receives a travel stipend to present his/her work at the established biennial International Conference of the Aeronautical Sciences (ICAS). Airfare and lodging expenses for the ASM trip and the ICAS/IAC trip are funded through the endowment. The technical work of the winners will also be submitted for publication in the professional media of aeronautics and astronautics, as well as announced in the media of all other professional societies. In addition to the student's award, Butler's advisor, Associate Professor Ken Visser, will also be recognized for his role in guiding the student. He will receive lodging and a check for $500 to help cover travel expenses to the AIAA ASM conference where he will be presented a certificate of recognition.

Joshua's research focused on non-intrusive Laser Doppler Velocimetry wind tunnel measurements of leading edge vortices about a 70° and 80°, flat plate delta wings. Periodic and stationary instabilities within the shear layer have been reported in literature and his study quantified characteristics of these shear layer substructures as a function of leading edge sweep, angle of attack, and chord-wise position to better understand the physics of this three-dimensional aerodynamic flow. Velocity and vorticity data were correlated with the magnitude of the turbulence intensity indicating that stronger vortices have higher values of axial turbulence intensity within the vortex shear layer and that the onset of vortex breakdown may be triggered by these increased turbulence levels.