Mechanical and Aerospace Engineering Seminar

Dr. Brent Pomeroy
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Will present a talk titled:

NASA Langley Low-Speed CFD Contributions to the Space Launch System Program

Abstract: In this presentation, low-speed computational work from NASA Langley in support of the Space Launch System (SLS) is discussed. This information will include both historic and present efforts with Kestrel, FUN3D, and USM3D. The low-speed aerodynamics of SLS is highly complex and analysis of the unsteady flow field requires significant computational and experimental efforts. The SLS mission profile varies from the vehicle static on the launch pad through high-speed ascent, and this talk focuses on the prelaunch as well as liftoff and transition portions of the flight (M<0.3) both in proximity to the launch tower and in isolation. High-alpha conditions, as large as 90 deg, result in a flow field dominated by massive, large-scale flow separation and asymmetric vortices. High-fidelity solutions require an unsteady computational formulation to accurately capture the aerodynamics of the vehicle. Adaptive mesh refinement is applied with complex IDDES simulations resulting in grids in excess of 3 billion cells.

Date: November 18, 2022
Location: CAMP 176
Time: 11:00 am
ZOOM Link for virtual attendance
https://clarkson.zoom.us/j/99234191973?pwd=MkcvM1ZKYW85cWZrN0FOM3lTc3VxQT09

Bio: Brent Pomeroy is a computational applied aerodynamicist working in the Configuration Aerodynamics Branch at NASA's Langley Research Center. In this capacity, his responsibilities include high-fidelity computational analysis of the SLS, simulations for the Drag Prediction Workshop, and natural laminar flow design for the SUSAN aircraft. Prior to NASA Langley, Brent worked in High-Speed Aerodynamics at Boeing Commercial Airplanes. He received his M.S. and Ph.D. from the University of Illinois while studying under Michael Selig and his B.S. with Honors from Clarkson University while studying under Ken Visser.