

Abstract Submitted
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Analysis of flow over an axisymmetric hull-form using Large Eddy Simulation¹ PRAVEEN KUMAR, KRISHNAN MAHESH, University of Minnesota — Large eddy simulations are performed for flow over an idealized axisymmetric hull at a Reynolds number of 1.1 million, based on hull length and freestream velocity. The domain is chosen to minimize confinement effects and the grid is designed to capture the near-wall physics as well as the evolution of turbulent wake. The entire hull is broken up into bow, mid and stern region and analyzed individually before merging them together, to ensure accurate solution on the final grid. The boundary layer is tripped on the bow region of the hull to make it turbulent as done in experiment. The turbulent boundary layer evolves on the mid region of the hull and eventually separates on the stern region due to the adverse pressure gradient, and forms the wake. Results are shown for the flow field and the pressure and skin-friction on the hull. The sensitivity of wake to the boundary layer characteristics on the stern is discussed.

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