

Abstract Submitted
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Large-Eddy Simulation of Propeller Crashback¹ PRAVEEN KUMAR, KRISHNAN MAHESH, University of Minnesota — Crashback is an operating condition to quickly stop a propelled vehicle, where the propeller is rotated in the reverse direction to yield negative thrust. The crashback condition is dominated by the interaction of free stream flow with strong reverse flow. Crashback causes highly unsteady loads and flow separation on blade surface. This study uses Large-Eddy Simulation to predict the highly unsteady flow field in propeller crashback. Results are shown for a stand-alone open propeller, hull-attached open propeller and a ducted propeller. The simulations are compared to experiment, and used to discuss the essential physics behind the unsteady loads.

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