

Abstract Submitted  
for the DFD14 Meeting of  
The American Physical Society

**LES of propeller crashback**<sup>1</sup> 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 a negative thrust. In crashback, the freestream interacts with the strong reverse flow from the propeller leading to massive flow separation and highly unsteady loads. We have used Large-Eddy Simulation (LES) in recent years to accurately simulate the flowfield in crashback around a stand-alone open propeller, hull-attached (posterior alone) open propeller and a ducted propeller with stator blades. This talk will discuss our work towards LES of crashback inclusive of the entire hull. The results will be compared to available experimental data, and the flow physics will be discussed.

<sup>1</sup>This work is supported by the Office of Naval Research.

Praveen Kumar  
University of Minnesota

Date submitted: 24 Jul 2014

Electronic form version 1.4