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Large-Eddy Simulation of Propeller Crashback Using an Unstructured Overset Grid Method[1] THOMAS KROLL, WYATT HORNE, KRISHNAN MAHESH, University of Minnesota — We discuss the application of a novel unstructured overset grid methodology to compute the flow around a marine propeller. We consider the crashback mode of operation where the propeller rotates in the reverse direction while the vessel moves in the forward direction yielding highly unsteady loads. The numerical algorithm is that developed by Horne and Mahesh [J. Comput. Phys (2019) 376:585-596] and addresses two significant challenges posed by the overset methodology - discrete conservation and scaling. The simulations consider open and ducted propellers. The results are compared to available experimental data and previous LES studies. Details of the flow field are discussed.

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