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Experimental Investigation of Slamming Loads on a Flat Plate DAVID JEON, California Institute of Technology, FRANCISCO HUERA-HUARTE, Universitat Rovira I Virgili, MATTHEW FU, MORY GHARIB, California Institute of Technology — Slamming loads on marine structures and vessels pose a hazard, with the potential for structural failure from the high momentary loads. With interest in higher speed vessels, exterior panels face tremendous impact loads from both wave impact and slamming. We have designed an experimental apparatus that can slam a variety of objects into a free surface at a range of deadrise angles and impact speeds. This system is instrumented with load cells to give us the force history of the impact, rather than the pressure on the face of the panel. Impact speeds over 5 m/s have been tested, with impact angles ranging from 1-25 degrees, using a foam core composite panel. We have documented the cushioning effect of trapped air between the plate and the free surface at small impact angles. We have also seen a correlation between the impact duration and the total force. The authors would like to thank the Office of Naval Research for their support of this experiment through award number N00014-06-1-0730. In addition, FJHH would like to acknowledge the support given by the European Commission through the Marie Curie IOF for actions for individuals (PIOF-GA-2008-219429).

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