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**Breaking Wave Impact on a Partially Submerged Rigid Cube in Deep Water**[1] C.M. IKEDA, University of Maryland, M. CHOQUETTE, Carnegie Mellon University, J.H. DUNCAN, University of Maryland — The impact of a plunging breaking wave on a partially submerged cube is studied experimentally. The experiments are performed in a wave tank that is 14.8 m long, 1.15 m wide and 2.2 m high with a water depth of 0.91 m. A single repeatable plunging breaker is generated from a dispersively focused wave packet (average frequency of 1.4 Hz) that is created with a programmable wave maker. The rigid ($L = 30.5$ cm) cube is centered in the width of the tank and mounted from above with one face oriented normal to the oncoming wave. The position of the center of the front face of the cube is varied from the breaker location ($x_b \approx 6.35$ m) to $x_b + 0.05$ m in the streamwise direction and from $-0.25L$ to $0.25L$ vertically relative to the mean water level. A high-speed digital camera is used to record both white-light and laser-induced fluorescence (LIF) movies of the free surface shape in front of the cube before and after the wave impact. When the wave hits the cube just as the plunging jet is formed, a high-velocity vertical jet is created and the trajectory and maximum height of the jet are strongly influenced by the vertical position of the cube.

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