

Abstract Submitted  
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**On the Geometrical Characteristics of Jets Produced in Plunging Breaking Bow Waves**<sup>1</sup> M. SHAKERI, M. TAVAKOLINEJAD, M. MAYER, P. KANG, J.H. DUNCAN, Department of Mechanical Engineering, University of Maryland — Simulated breaking bow waves were generated using a 2D+T wave maker in a tank that is 14.8 m long, 1.15 m wide and 2.1 m deep (water depth of 1.83 m). In the 2D+T simulation, the sequence of shapes of the flexible surface (wave board) of the wave maker reproduce the time varying intersection of one side of the ship hull with a vertical plane oriented normal to the ships track as the ship moves in calm water at constant speed. The profile histories of the breaking bow waves created by the wave maker were measured with an LIF system that employs a high-speed digital movie camera recording at 250 frames per second. The optics and camera are mounted on an instrument carriage that is set to move with the top portion of the wave board. For equivalent full scale ship speeds greater than about 20 knots, a large plunging breaker is formed. In this talk, measurements of the geometrical characteristics and motion of the plunging jet of the breaker are presented. The impact of the jet with the smooth surface of the forward face of the wave creates a large splash ahead of the impact point. The relationship between the jet characteristics and the geometrical characteristics of the splash zone are discussed.

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