

Abstract Submitted
for the DFD15 Meeting of
The American Physical Society

Numerical and Experimental Investigation of Oblique Shock Wave Reflection from a Water Wedge QIAN WAN, HONGJOO JEON, VERONICA ELIASSON, Univ of Southern California — Shock wave interaction with solid wedges at different inclination angles has been an area of much research studied in the past, but not many results have been obtained for shock wave reflection from liquid wedges. To find the transition angle from regular to irregular reflection of shock wave reflection over liquid wedges - both Newtonian and non-Newtonian liquids - we used a combination of experimental and numerical methods. In experiments, an inclined shock tube with adjustable inclination angle and a test section filled with the liquid of interest was used. Simulations were performed using a collection of CFD and CSD solvers to simulate the same situation as in the experiments. Results show that the transition angles for liquid wedges is different from smooth solid wedges, but agree fairly well if one assumes a certain surface roughness of the solid wedge.

Qian Wan
Univ of Southern California

Date submitted: 30 Jul 2015

Electronic form version 1.4