

Abstract Submitted
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Crown sealing and buckling instability during sphere impact

JEREMY MARSTON, Texas Tech University, TADD TRUSCOTT, Brigham Young University, MOHAMMAD MANSOOR, SIGURDUR THORODDSEN, King Abdullah University of Science and Technology — We present results from an experimental investigation of the classical crown splash and sealing phenomena observed during the impact of spheres onto quiescent liquid pools for a range of ambient pressures. A 6-metre tall vacuum chamber was used to provide the required ambient conditions from atmospheric conditions down to 1/16th of an atmosphere. We pay particular attention to the above-surface crown formation and ensuing dynamics, including the buckling instability of the crown just before seal. In addition, we have observed the very rapid motions of the ejecta formed immediately after impact, using ultra-high-speed imaging at frame rates over 400,000 fps, which reveals qualitative differences at reduced pressures.

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