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Splash or not : Water entry of solid bodies CYRIL DUEZ, CHRISTOPHE YBERT, University Lyon I , CHRISTOPHE CLANET, IRPHE, University of Marseille, LYDERIC BOCQUET, University Lyon I — The impact of a solid sphere on an air-water interface is studied experimentally. Above a threshold velocity, a large cavity is created during the collision process. We have studied exhaustively the dependence of the threshold velocity on the sphere characteristics (size, roughness, surface properties, ...), but also on the gas properties (e.g., density). Experiments suggest that the criterion for air entrainement is defined in terms of a critical capillary number, $Ca = \eta_{air} V/\gamma$, with γ the liquid-vapor surface tension and η_{air} the air viscosity. A simple model is proposed which allows to capture this behavior.

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