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Collisions between a rising bubble and a rigid sphere A. BELMONTE, W. G. Pritchard Labs, Dept of Mathematics, Penn State, S.T. THORODDSEN, Division of Physical Sciences and Engineering, KAUST, Saudi Arabia — Motivated by studies of particle sedimentation in bubbly turbulence, we perform an experimental study of the controlled collision between a rising bubble and a rigid sphere. Both stationary and sinking spheres are considered. Impact dynamics including bouncing are measured as a function of relative sizes, collision velocity, buoyancy, surface tension, and the viscosity of the continuous phase. High-speed video imaging is used to measure the bubble deformations and the induced capillary waves. We estimate the effective coefficient of restitution of the collision and compare to recent models for bubbly sedimentation.

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