

Abstract Submitted  
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**Contact model for a normal immersed collision between a solid sphere and a wall**<sup>1</sup> XIAOBALI, MELANY L. HUNT, TIM COLONIUS, Division of Engineering and Applied Science, California Institute of Technology — Particle collisions in a liquid environment play an important role in the study of liquid-solid flows. This talk focuses on the collision process and presents simulations of the coupled motion of a solid particle and surrounding liquid. The simulations use an immersed boundary method with axisymmetric coordinates to investigate the normal collision between a rigid sphere and a wall in viscous liquid. A contact model including the elasticity during the solid contact is introduced into the simulation when the distance between the sphere and the wall falls below a certain value, which enables the calculation to reproduce the rebound process with calibrated model parameters. Simulation results are compared with experimental measurements of the impact and rebound trajectories for a range of Stokes numbers. The long term goal of this work is to develop collisional strategies that can be incorporated into simulations involving many particles in a viscous fluid.

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