

Abstract Submitted
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A Computational Study on the Internal Splash Effect LAUREN COOPER , The University of North Carolina at Chapel Hill, CHRIS WOJTAN, Georgia Institute of Technology, NIPUN KWATRA, Stanford University, PETER MUCHA, The University of North Carolina at Chapel Hill — We present a comparison of computational results with published experimental results regarding a falling sphere in stratified fluid. It has been shown experimentally [1] that a sphere falling through a stratified fluid may experience a temporary reversal of direction near the miscible interface between different density fluids. This is attributed to the hydrodynamic coupling experienced by the sphere with the entrained lighter density fluid that is dragged into the heavier surrounding fluid. We consider simulations of this system both in 2D and in 3D, treating the hydrodynamic coupling to the rigid ball by a distributed Lagrange multiplier technique [2], with suitable modification of the “Rigid Fluid” code [3]. [1] Abaid N., Adalsteinsson D., Akua A., McLaughlin, R.M. 2004. In *Physics of Fluids* 16,5. [2] Patankar, N.A. 2001. Center for Turbulence Research Annual Research Briefs 2001, 185-196. [3] Carlson, M., Mucha P.J., Turk, G. 2004. In *ACM SIGGRAPH 2004 conference proceedings*.

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