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Internal flow and deformation of a liquid CO_2 drop rising through water[1] LOUIS L. STEYTLER, ARNE J. PEARLSTEIN, University of Illinois at Urbana-Champaign — We report computations of the steady axisymmetric flow in and around a deformable liquid drop of CO_2 ascending through a water column under the action of buoyancy, a problem relevant to risk assessment for sub-seabed carbon sequestration and storage. In these initial computations, we consider several drop densities, corresponding to different depths in the ocean, and neglect dissolution of CO_2 into the surrounding water and formation of a hydrate film at the drop/water interface. The results, which extend our previous work (Bozzi et al., *J. Fluid Mech.*, **336**, 1-32, 1997) to the case in which the dynamic viscosities of the dispersed and continuous phases are unequal, show that the degree of deformation and internal circulation depend strongly on drop size.

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