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Evolution and Pinch-off of Axisymmetric Viscous Bubbles in Stokes Flow SHADI NADERI, MONIKA NITSCHE, University of New Mexico — Boundary integral simulations of the evolution of an axisymmetric viscous bubble in an axisymmetric strain field are presented, using the Stokes flow approximation. Previous works have shown the bubble reaches a steady state while the capillary number measuring the strain field stays below a critical value. Above this value no steady state is found. Previous experimental observations and numerical works indicate that a slight increase in the capillary number past this critical value causes an elongation and break-up. We present numerical studies of the evolution of bubbles towards the steady state subject to various capillary numbers and viscosity ratios using the high order method developed by Ceniceros, Karniala and Nitsche (preprint). Steady state results obtained from this method are compared with previous findings. A numerical investigation of pinch-off for a capillary number past this critical value is presented.

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