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# Static Shapes of Levitating Viscous Drops

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We consider the levitation of a drop of molten glass above a spherical porous mould, through which air is injected with a constant velocity. In the present context, we assume that the glass is so viscous compared to the air that we can neglect the motion in the drop. Therefore, if static shapes of the drop exist, these shapes are completely determined by the coupling between the equations of motion in the air cushion and the Young–Laplace equation. Assuming that the pressure applied on the upper surface of the drop is atmospheric, this sessile solution is computed. A lubrication model for the thin air film is used to find static shapes of the lower surface of the drop. Then a comparison with full Navier–Stokes simulations is presented, and an argument is given about the stability of these solutions.

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