Shape and stability of levitated viscous drops[1] JOHN LISTER,
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RIOT, LAURENT DUCHEMIN, IRPHE, Marseille, France — A drop of molten
glass can be levitated above a porous spherical mould by air injection. Owing to
the viscosity contrast, the float height for a given shape is established on a much
shorter time scale than the subsequent deformation of the drop under gravity, surface
tension and the lubrication pressure. The set of solution branches for equilibrium,
non-deforming shapes is surprisingly complicated and shows a rich bifurcation struc-
ture in (Bo, Ca) space (drop volume, injection velocity). The stability of equilibria
is determined using a novel boundary- integral representation that factors out the
rapid adjustment of the float height.

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