Abstract Submitted
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A coating flow on a rotating vertical disk EDWARD HINCH, MATTHEW CROWE, DAMTP, Cambridge University, UK — A thin viscous film of liquid on a vertical disk can be stopped from dripping off by slowly ($Re \ll 1$) rotating the disk about its horizontal axis. When surface tension is neglected, it is known [Phys Fluids 21 103102] that the thickness of the film is constant around circles whose centres are offset from the centre of the disk. Small nonzero surface tension determines the variation of the thickness on the differing circles, and the above paper found the first 4 terms in an expansion for small gravity. Acrivos [Phys Fluids 22, 05901] has speculated on the maximum strength of gravity before dripping starts. A new integro-differential equation in the non-orthogonal coordinates of the eccentric circles is derived and solved for the distribution of thickness across the circles, to test Acrivos's speculation.

Edward Hinch
DAMTP, Cambridge University, UK

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