Abstract Submitted
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The Vibration of an Inviscid Incompressible Sessile Drop MARC SMITH, Georgia Institute of Technology — The fundamental frequencies and normal modes of vibration of a sessile drop supported on a horizontal planar surface are found using an integrated analytical and numerical technique. Spherical coordinates are used to describe the interface shape, but the potential flow field inside the drop is computed numerically using the finite element method. The numerical velocity potentials at the interface for both the fluid inside the drop and outside are fitted using a Legendre series. When these series are combined in the interfacial normal-stress balance the result is a linear eigenvalue problem that is solved numerically. Results will be presented for sessile drops with different contact angles without gravity and compared to experimental data. This technique can also be extended to sessile drops with gravity, in which the drop shape is flattened, and to substrate geometries that are not planar, such as a drop in a shallow cavity or hole.

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