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The healing of a viscous annular thread and formation of an entrained bubble- fingerprints of dripping of a viscous film FAN YANG, HOWARD STONE, Princeton University — We focus on a generic type of dripping-dripping of a viscous annular thread- that is not well-studied. Unlike conventional jet or droplet dripping, which forms a cylindrical liquid column, we study experimentally and theoretically configurations that lead to the formation of a liquid annulus in the initial stage of film dripping. Then the annulus heals due to surface tension and the inner surface forms a retracting cusp. We document that the shape of the cusp is universal and the retraction speed is determined by the balance of viscous and capillary stresses. During the healing process, air is driven into the droplet and consequently forms an entrained bubble. A one-dimensional model is applied to analyze the healing dynamics, which shows good agreement with experiment measurements.

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