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The Stability of the Static Pendant Drop[1] XIN LIN, LEWIS JOHNS, RANGA NARAYANAN, University of Florida — The instability of a pendant drop is explained. The liquid in the drop is heavier than the surrounding fluid. The scaled groups that describe the stability are the scaled volume and the Bond number. We show without computations that the volume of the drop has a maximum value beyond which it must break catastrophically. However this upper bound on volume is not the instability limit for the drop for all Bond numbers. There exists a critical Bond number, above which the drop breaks before the upper bound on volume can be reached. We discuss why this occurs and what it means for the physics of the break-up.

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