MS5S_12765

XXI International Congress of Theoretical and Applied Mechanics
Warsaw, Poland, August 15–21, 2004

The Stability of Connected Pendant Drops

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The stability of an equilibrium system of two drops suspended from circular holes is examined. The drop surfaces are disconnected surfaces of a connected liquid body. For holes of equal radii and identical pendant drops axisymmetric perturbations are always the most dangerous. The stability region for two identical drops differs considerably from that for a single drop. Loss of stability leads to a transition from a critical system of identical drops to a stable system of axisymmetric non-identical. This system of non-identical drops reaches its own stability limit (to isochoric or non-isochoric perturbations). For non-identical drops, loss of stability results in dripping or streaming from the holes. Critical volumes for non-identical drops have been calculated as functions of the Bond number, B. For unequal hole radii, stability regions have been constructed for a set of hole radius ratios, K. The dependence of critical volumes on K and B is analyzed.

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