

Abstract Submitted
for the DFD20 Meeting of
The American Physical Society

Entrainment Regime in Selective Withdrawal with a Tube¹ ZEHAO PAN, JANINE NUNES, HOWARD STONE, Princeton University, STONE GROUP TEAM — Selective withdrawal is applied through a capillary tube oriented perpendicular to a flat gravitationally-separated liquid-liquid interface. Fluid entrainment occurs when both the top and bottom phases are withdrawn. The use of tube introduces two distinct features to the conditions for entrainment: an early ending to entrainment as the tube moves into the interface and a minimum withdrawal flow rate for entrainment. We show that these phenomena can be understood based on the Reynolds number that governs the flow field around the capillary and the capillary and Weber numbers that regulate the effect of the surface tension.

¹NSF Grant CMMI-1661672

Zehao Pan
Princeton University

Date submitted: 31 Jul 2020

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