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Theoretical challenges in modeling gravity-driven thin-film flow with buoyant particles PAUL DAVID, University of Southern California, SPENCER HILL, PAUL LATTERMAN, University of California, Los Angeles, WYLIE ROSENTHAL, Harvey Mudd College, ALIKI MAVROMOUSTAKI, MATTHEW MATA, ANDREA BERTOZZI, University of California, Los Angeles
— We discuss the role of shear-induced migration in particle-laden thin-film flow. For heavy particles, recent experimental results show that this effect explains separation of behavior into three different regimes. In contrast only one regime is present in the case of buoyant particles although the behavior can depart significantly from that of a clear fluid. We discuss current modeling challenges for buoyant particle-laden flow including stability and dynamics of the front in the context of several available models for this problem.

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