

Abstract Submitted
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Solid boundaries: a new way to to a pick a length scale at low Reynolds number BLAISE DELMOTTE, Courant Institute of Mathematical Sciences, NYU, MICHELLE DRISCOLL, PAUL CHAIKIN, NYU Physics, ALEKSANDAR DONEV, Courant Institute of Mathematical Sciences, NYU — At low Reynolds number, hydrodynamic interactions between suspended particles are long ranged and strongly depend on the presence of nearby boundaries. In particular, collective motion in a suspension can be strongly modified by a nearby wall. Combining experiments, large scale numerical simulations and continuum models, we investigate two surprisingly overlooked examples that illustrate the effect of a wall on collective motion: (1) the fingering instability in suspensions of particles rotating above a floor (microrollers) (2) the lengthscale selection in suspensions of particles sedimenting parallel to a wall. We will show how these two examples unveil a universal mechanism of lengthscale selection by boundaries at low Reynolds number.

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