

Abstract Submitted  
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**Surface instability of shear-thickening suspensions down an inclined plane** BAPTISTE DARBOIS TEXIER, BLOEN METZGER, HENRI LHUISSIER, YOEL FORTERRE, Aix-Marseille University, IUSTI-CNRS UMR 7343, 13453 MARSEILLE, FRANCE TEAM — Shear-thickening of dense suspensions is one of the most appealing phenomena of science festivals. The dramatic increase of the viscosity with the shear stress is now understood as a frictional transition occurring above a critical stress set by a repulsive interaction between particles. Here, we investigate the stability of a thin film of cornstarch suspension flowing down an inclined plane. At low packing fractions, the film is unstable above a critical Reynolds number given by the well-known Kapitza criterium for Newtonian fluids. However, at high packing fractions, as shear-thickening becomes discontinuous, a new instability emerges at Reynolds numbers much smaller than the Kapitza threshold. We show that this instability arises from the characteristic S-shape of the rheological law.

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