

Abstract Submitted
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Viscoelastic Liquid Curtain LUC LEBON, LAURENT LIMAT, ANTOINE GAILLARD, CNRS / Univ. Paris Diderot, JULIEN BEAUMONT, Saint-Gobain Recherche, Aubervilliers, HENRI LHUISSIER, IUSTI, Marseille, LABORATOIRE MSC TEAM — We have investigated experimentally the properties and stability of viscoelastic curtains, falling from a long thin slot and maintained laterally by two highly wetting wires. We have observed several original facts, compared to the seminal work of Brown and Taylor [1] on Newtonian curtains: (1) The stability with respect to breaking is considerably enhanced by the use of appropriate polymers. Even strange tree-like falling filament structures can be also stabilised, though less interesting for applications. (2) Specific instabilities can be observed, when the amount of polymers is excessive, with spatial and temporal modulations of the coating thickness. (3) Even the base state is modified, and does NOT reduce at large scale to a free fall, even slightly displaced vertically from the expected profile. We present this experimental exploration and also some attempts of analytical modeling based on Rheological theories of complex fluids.

[1] D. R. Brown, “A study of the behaviour of a thin sheet of moving liquid,” *J. Fluid Mech.*, **10**, 297-305 (1961)

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