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The spreading of droplets of nanoparticulate suspensions RICHARD CRASTER, OMAR MATAR, Imperial College London, KHELLIL SEFIANE, Edinburgh University — The spreading or thinning of even simple fluids, micellar- or particle-laden solutions are often accompanied by terracing in the free surface at the advancing contact line or stepwise thinning. Several notable examples appear in the literature: the terraced spreading of nanodroplets showing the advance of the droplet edge as molecular layers, the stepwise thinning of liquid films of micellar solutions And, more recently, in the detachment of oil droplets by nanoparticle laden solutions. This talk explores the dynamics of this latter example by generating a dynamical model exploiting structural disjoining pressures. We show that a distinct step (of the diameter of a nanoparticle) emanates from the contact line and advances with constant velocity; this is broadly in line with experimental observations.

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