Abstract Submitted
for the DFD16 Meeting of
The American Physical Society

Lubricated wrinkles OUSMANE KODIO, IAN GRIFFITHS, DOMINIC VELLA, Mathematical Institute, University of Oxford — We investigate the problem of an elastic beam above a thin viscous layer. The beam is subject to a fixed end-to-end displacement, which will ultimately cause it to adopt the Euler-buckled state. However, additional liquid must be drawn in to allow this buckling. In the interim, the beam forms a wrinkled state with wrinkles coarsening over time. This problem has been studied experimentally by Vandeparre *et al. Soft Matter* (2010), who provided a scaling argument suggesting that the wavelength, λ, of the wrinkles grows according to $\lambda \sim t^{1/6}$. However, a more detailed theoretical analysis shows that, in fact, $\lambda \sim (t/\log t)^{1/6}$. We present numerical results to confirm this and show that this result provides a better account of previous experiments.

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Date submitted: 01 Aug 2016 Electronic form version 1.4