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Non-Brownian microrheology of a fluid-gel interface ERIK K. HOBBIIE, SHENG LIN-GIBSON, NIST, SATISH KUMAR, University of Minnesota
— We use stroboscopic video microscopy to study the stability of a planar fluid-gel interface under simple steady shear flow. External mechanical noise plays a role analogous to temperature, with periodic fluctuations associated with the repeated build-up and release of stress. We relate the high frequency motion of the interface to the rheological properties of the underlying gel, pointing toward potential applications in the area of non-Brownian optical microrheology. At low frequency, the data suggest a breakdown of linear response, which we interpret as the emergence of an instability that is intrinsic to the driven interface.

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