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Microrheology of a sticking transition SHOBO BHATTACHARYA, PRERNA SHARMA, SHANKAR GHOSH, Tata Institute of Fundamental Research, Mumbai, India 400005 — The phenomenon of colloidal deposition in presence of shear is studied by using an optical tweezer to hold a colloidal particle in close proximity of a plate subject to a sinusoidal in-plane shaking. Through the measurement of the real and imaginary parts of the particle's response function, the coupling between the particle and the plate is found to evolve from a viscous regime to an elastic regime through an intermediate regime of time-dependent enhancement of viscoelasticity, reminiscent of aging in glasses. The sticking transition can be described in a scenario of hindered Stokes-Einstein diffusion and the Maxwell model of viscoelasticity. Upon changing the bead -plate interaction or the strength of the drive, three regimes of response: stick, stick-slip and slip are observed. The observed behavior has analogies to jamming in granular materials and the glass transition in viscous liquids.

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