

Abstract Submitted
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Rotational and translational diffusion in a 2D colloidal glass-former¹ ERIC WEEKS, SKANDA VIVEK, Emory Univ — We use video microscopy to observe the diffusive motion of dimer tracers in a quasi-2D sample of colloidal spheres. This sample is a good model for the glass transition, which occurs for a sufficiently high particle concentration. At lower concentrations, the dimer rotational and translational motions are coupled to each other: their ratio is a constant, independent of the concentration of the spherical particles. At higher concentrations of the spherical particles (close to the colloidal glass transition), we observe decoupling between translational and rotational diffusion. In particular, small dimers rotate faster than might be expected. This is because small dimers can rotate within the cage formed by their spherical neighbors with little steric hindrance, in contrast with the larger dimers.

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Eric Weeks
Emory Univ

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