

Abstract Submitted  
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**Brownian Motion of an ellipsoid**<sup>1</sup> YILONG HAN, Department of Physics and Astronomy; University of Pennsylvania, AHMED ALSAYED, MAURIZIO NOBILI, CNRS-University Montpellier II, France, JIAN ZHANG, TOM LUBENSKY, ARJUN YODH — We report direct digital-video-microscopy measurements of the Brownian motion of isolated anisotropic (ellipsoidal) particles in water under quasi-2D confinement. The probability density function (PDF) of displacements in the lab-frame is found to be nonGaussian. This effect originates from the anisotropy of the hydrodynamic drag coefficient. The transition from anisotropic to isotropic diffusion and the correlations between translational and rotational motions are also measured. The observations are confirmed numerically and understood theoretically via a Langevin formalism. We also observed the ratio of diffusion coefficients,  $D_a/D_b$ , along long and short axes, respectively, could be larger than 2, the theoretical upper limit in three dimension.

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