

Abstract Submitted
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Vesicle membrane fluctuations at nm resolution KEJIA CHEN, SUNG CHUL BAE, CHANG-KI MIN, STEVE GRANICK, University of Illinois at Urbana-Champaign, GRANICK GROUP TEAM — We measure membrane thermal fluctuations with nanometer spatial resolution and microsecond time resolution, extending a scattering technique used at the Curie Institute to study red blood cell dynamics (Timo Betz et al., Proc. Nat. Acad. Sci. USA 106, 15320, 2009). A laser beam is focused at the leading edge of a phospholipid vesicle membrane and the forward scattered light is detected by a quadrant photodiode. The measurements over 4 orders of magnitude of frequency allow quantification of more complete fluctuation spectra than competing methods, and therefore fuller understanding of the vesicle membrane mechanics. As a proof of concept, we quantify how adsorbed nanoparticles stiffen giant unilamellar vesicles (GUVs).

Kejia Chen
University of Illinois at Urbana-Champaign

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