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Hydrodynamic damping of collective motion in a quasi-two-dimensional dense colloidal particle suspension[1] MICHAEL RYAN, West Chester University, TIM STILL, ARJUN YODH, University of Pennsylvania, KEVIN APTOWICZ, West Chester University — Dense colloidal suspensions confined to a monolayer are often used to explore physical phenomena such as the glass transition, crystallization, and frustration. Although hydrodynamic damping is known to play a significant role in the dynamics of these systems, it is difficult to quantify due to the collective nature of the particle motions. In this work, we employ digital video-microscopy to explore the phonon dynamics of an entropic 2D colloidal crystal. Friction coefficients along high symmetry directions in q-space are extracted and provide insight about the hydrodynamic forces at play. Preliminary results suggest the friction coefficient decreases with increasing phonon wavelength, but it does not appear to vanish.

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Kevin Aptowicz
West Chester University

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