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Simulating Collective Dynamics of Confined Colloids[1] JONATHAN K. WHITMER, ERIK LUIJTEN, University of Illinois at Urbana-Champaign — We investigate the dynamical behavior of colloidal particles under confinement, by means of computer simulations that explicitly account for hydrodynamic interactions. Even under dilute conditions, long-range solvent-mediated coupling of the translational and rotational degrees of freedom influences the relative motion of colloidal particles. These effects on the collective dynamics are often ignored in simulations. Our calculations utilize the hybrid Stochastic Rotation Dynamics/Molecular Dynamics method [A. Malevanets and R. Kapral, J. Chem. Phys. **112**, 7260 (2000)] to incorporate both hydrodynamic and Brownian forces exerted on colloids by the solvent. The computational results are compared to recent experiments on few-body colloidal systems where the particle number is limited through confinement in a cylindrical trap.

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