

Abstract Submitted
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Correlated Motion of Ellipsoids Diffusing in 3D KENNETH DESMOND, ERIC R. WEEKS, Emory University — Currently the hydrodynamic interaction between two ellipsoids in a fluid is not well understood. By observing the Brownian motion of micron sized ellipsoids suspended in a fluid using confocal microscopy, we directly measure these interactions. The ellipsoids exhibit both translational and rotational diffusion. The motion of an ellipsoid induces a flow field, which couples the motion of other ellipsoids with the first one. In our experiments we measure the translational and rotational diffusion of polystyrene ellipsoids suspended in a water glycerol mixture in three dimensions, and examine the spatial correlations between the rotational and translational motion of pairs of ellipsoids. Rotational motions set up a dipolar flow field, and thus the resulting correlations decay quicker than the correlations caused by translations.

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