

Abstract Submitted
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Interacting Superparamagnetic Brownian Particles in an Array of 2D Asymmetric Magnetic Traps¹ GREGORY VIEIRA, AARON CHEN, R. SOORYAKUMAR, The Ohio State University Department of Physics — We report on the ordering and fluctuation of multiple superparamagnetic particles confined by a thin liquid layer in a two-dimensional array of asymmetric magnetic trapping potentials. The repulsive dipolar interaction between magnetic particles and their confinement by the trapping potential cause the particles to form a cluster with characteristic inter-particle spacing within each trapping site, while the particles undergo thermal fluctuations. Applying an external magnetic field offers a convenient way to control the strength of the dipolar interactions and change the trapping potential landscape. Results on (a) Brownian motion of individual particles in the cluster, (b) re-distribution of particles into new clusters driven by a change in the external field, and (c) hopping of particles between clusters under fluid flow will be presented.

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