

Abstract Submitted
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Studies of colloids on spherical interfaces using digital holographic microscopy JEROME FUNG, RYAN J. MCGORTY, VINOOTHAN N. MANOHARAN, Harvard University, Dept. of Physics — Colloidal particles pinned to the surface of an oil droplet in water form robust equilibrium structures at low area fractions. To better understand the interactions in this system, we are studying these structures and their dynamics during quasistatic changes in the area fraction. We do so by imaging the 3D structures with fast temporal resolution using digital holographic microscopy (DHM). To keep the particles in non-density matched colloidal samples in the field of view, we have constructed a new apparatus to perform DHM under time-averaged zero gravity using a rotating stage. In DHM, we illuminate a sample with a laser beam and then magnify and digitally record the interference patterns between the scattered and unscattered light. Subsequent numerical reconstruction of the recorded 2D holograms allows 3D particle tracking with millisecond time resolution and submicron spatial resolution.

Jerome Fung
Harvard University

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