

Abstract Submitted  
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**Structures Formed by Small Numbers of Colloidal Particles Bound to a Spherical Interface** RYAN MCGORTY, VINOTHAN N. MANOHARAN, Harvard University, Department of Physics — We study the behavior of micron sized colloidal particles adsorbed on the interface of spherical droplets not much larger than the colloids. We compare the structures formed by interfacially-bound particles at low particle number to predicted geometries such as the proposed solutions to the Thomson and Tammes problems. The predicted geometries depend critically on the interactions between particles in this low particle number regime. Because all particles on a droplet must be tracked simultaneously, such colloidosome systems have not yet been explored experimentally due to the limited time and z-resolution of confocal and bright-field microscopy. To overcome such limits, we use digital holographic microscopy to locate all particles within a volume of roughly  $100 \times 100 \times 50 \mu\text{m}^3$  at speeds of up to 500 frames per second. The experimental setup and reconstruction algorithms will be discussed along with our results.

Ryan McGorty  
Harvard University, Department of Physics

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