

Abstract Submitted  
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**Holographically Assembled Photonic Quasicrystals** YAEL ROICHMAN, DAVID G. GRIER, New York University — Recently, the photonic band structure of a centimeter-scale three-dimensional icosahedral quasicrystal was measured in the microwave region and shown to feature prominent photonic band gaps at the effective Brillouin zone boundary. We demonstrate that similar two- and three-dimensional quasicrystalline photonic structures can be assembled from micrometer-scale colloidal particles through dynamic holographic optical trapping. The resulting colloidal heterostructures feature lengthscales appropriate for photonic bandgap applications at visible wavelengths, and can include specifically engineered defects such as vacancies, active centers and waveguides.

Yael Roichman  
New York University

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