

Abstract Submitted
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Long-Range Tractor Beams for Colloidal Particles¹ ARGHA MONDAL, AARON YEVICK, DAVID GRIER, New York University — Optical micromanipulation is an increasingly powerful platform for research in soft-matter science. We recently extended the technique of holographic optical trapping to create practical implementations of tractor beams, modes of light that transport illuminated objects upstream along their entire length. These proof-of-concept demonstrations were limited by poor diffraction efficiency. Here, we introduce the technique of intermediate-plane holographic trapping that offers a hundred-fold increase in diffraction efficiency, trapping strength and transport speed. While the present talk focuses on transport in tractor beams, the same technique can be used to improve the performance of other modes of optical micromanipulation.

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