

# Colloquium Notice

**David Grier**

**Department of Physics and Center for Soft Matter Research, New York University**

*The Guiding Light: Holographic Control over the Microscopic World*

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This talk focuses on the statistical mechanics of micrometer colloidal particles moving through landscapes of force and torque that are created with computer-generated holograms. These optical force fields can take the form of discrete optical tweezers that can trap and hold microscopic objects in three dimensions. They also can be far more exotic, and include the first experimental implementation of a knotted force field, and the first successful demonstration of a true tractor beam. In addition to the conservative forces that create traps, holographically structured light fields also exert non-conservative forces whose intriguing ramifications we observe with holographic video microscopy. These observations reveal a previously unrecognized category of stochastic heat engines.  
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Monday

**April 29, 2013**

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326