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State Diagram for Optical Tweezers Induced Brownian Motors

BO SUN, DAVID GRIER, New York University — State Diagram for Optical Tweezers Induced Brownian Motors Bo Sun and David G. Grier Center for Soft Matter Research Department of Physics New York University Optical tweezers are extensively used in physics and biology, most study in literatures assume a colloidal particle trapped in optical tweezers relaxes to equilibrium state. To the contrary, we have found experimentally the particle became a Brownian motor. Further more, this Brownian motor showed reversible behavior: given input power, working direction changes when particle size grows; given a particle bigger than wave length of light, changing input power can also change the working direction. Thus we need a state diagram to describe the motor behavior of a colloidal particle in optical tweezers, rather than a potential landscape as most previous study uses.

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