2015

Dynamics of an optically trapped particle

Flaherty Justin
Cleveland State University

Dynamics of an optically trapped particle

College of Sciences and Health Professions

Student Researcher: Justin Flaherty

Faculty Advisor: Andrew Resnick

Abstract

Particles trapped in a laser experience a linear restoring force that keeps them centered in the trap and will undergo restricted Brownian motion. The Brownian motion causes a change in the scattered laser light. The scattered light is projected onto a Quadrant Photodiode and can be used to obtain the Mean Squared Displacement of the particle, as well as the linear spring constant of the laser trap. The spring constant can be used to obtain the force applied by the laser trap, which is in the realm of piconewtons.