Physics
AT QUEENS COLLEGE

Colloquium Notice

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Macroscopic quantum mechanics with levitated nanoparticles

This talk will focus on optomechanics, i.e. the interaction of mechanical motion with modes of the electromagnetic field. Optomechanics is currently at the frontier of physics research as an enabler of fundamental investigations into macroscopic quantum mechanics, as well as a platform for next-generation ultrasensitive measurement devices. The first half of this talk will introduce the subject by reviewing results in cavity optomechanics, namely the interaction of mechanical motion with electromagnetic modes confined to resonators. Of chief interest will be degrees of vibrational, torsional and free rotational mechanical motion as well as polarization and orbital angular momentum-carrying optical beams. The second half of the talk will consider *cavityless* optomechanical systems, which are distinguished by the absence of a resonator, the presence of ultralow damping, and the use of highly nonlinear feedback. In this context we will describe our theoretical modeling of the optical levitation experiments being carried out in the group of our collaborator Prof. A. N. Vamivakas at the Institute of Optics, University of Rochester.

Monday
November 23, 2015
Starts at 12:15 PM
Coffee at 12:00 PM
Physics Conference Room, SB B326