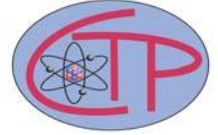




**NEW YORK CITY COLLEGE OF TECHNOLOGY**  
**Physics Department**  
**Center for Theoretical Physics**



**Effects of confinement and degeneracy on optomechanical interaction between whispering-gallery-modes and a nanoparticle: old results and new ideas**

*Presented by*

**Professor Lev Deych**

**Department of Physics, Queens College CUNY**

**Thursday, February 24 at 12:00 noon**

**Join Zoom Meeting**

<https://liu.zoom.us/j/95982278687?pwd=L29EMGtPVmpocUd6OUZVS3M2TGFpZz09>

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Optical force on a polarizable dipole is usually divided into a conservative force, described as a gradient of the effective potential energy proportional to the intensity of electromagnetic field, and a non-conservative scattering or radiative pressure force. In this talk I will show that combination of the confinement of light in highly symmetrical optical cavity results in destroying the conservative nature of the gradient component of the optical force. This effect is explained in terms of the backaction of a mechanical dipole on the field of the resonator. I will also introduce a new optomechanical model inspired by these results and present some

preliminary results showing existence of a highly non-trivial classical dynamics in this model even in the absence of external pump and losses.