

# Bright-Triplet Excitons and Phonon Coupling in Colloidal Nanocrystals

Albert Liu

Department of Physics, The University of Michigan, Ann Arbor

\*Currently at The Max Planck Institute for the Structure and Dynamics of Matter, Germany

Colloidal quantum dots (CQDs) are a maturing technology that have potential applications in numerous areas of optoelectronics. However, many aspects of their microscopic physics, such as exciton-phonon interactions and coherent electronic dynamics are poorly understood. The inhomogeneous broadening of CQD spectra obscures the dynamics exhibited by dots of a given size, and can usually only be studied by techniques such as single-dot measurements and spectral hole burning.

In this talk, I will discuss two of our recent studies in applying multi-dimensional spectroscopies to circumvent the inhomogeneous broadening of CQD ensembles. Our experiments at cryogenic temperatures provide insights into exciton-phonon interactions in CdSe nanocrystals and bright-triplet exciton dynamics in CsPbI<sub>3</sub> perovskite nanocrystals.