



5th June 2019 - 2:00 p.m.
 CFEL-bldg. 99, seminar rooms II & III

Joseph Subotnik

Department of Chemistry, University of Pennsylvania, USA

Semiclassical electrodynamics: Learning from past progress in chemical nonadiabatic dynamics

Within the physics and chemistry communities, there is currently an enormous interest in the phenomena of strong light-matter coupling. Whether in cavities or in plasmonic materials, there is today clear evidence that the quantum nature of light and matter can become entangled in very interesting ways, and moreover there is hope that this entanglement can be exploited and lead to new devices. In order to predict light-matter behavior, one outstanding question is: how can we best model light-matter systems in a predictive manner so that we can model large, realistic systems and gain intuition for quantum electrodynamics? In this talk, I will highlight our recent attempts to semiclassically merge the Schrödinger equation with Maxwell's equations so as to recover the essential effects of strong light-matter coupling (that are not captured classically). This work in semiclassical electrodynamics draws on much older (and more developed) work in semiclassical nonadiabatic molecular dynamics, highlighting the fact that many outstanding questions remain at the intersection of chemical and atomic physics.

