Self-Consistent Radiative Scattering in Time Dependent Density Functional Theory
Ryan Hatcher, Alan Tackett, Sokrates Panteleides, Vanderbilt University — Time Dependent Density Functional Theory (TDDFT) is an ab initio theory that can be used to model time varying electron densities. We propose a semi-classical method for calculating the self-consistent radiation from a time varying electron density in a TDDFT framework. This scheme allows one to simulate a system where a time varying electron density scatters energy both into the lattice as well as into an electro-magnetic field. We will present a description of this technique and describe a few applications in which it has been employed.