

Abstract Submitted  
for the DPP15 Meeting of  
The American Physical Society

**Spectroscopic and X-Ray Scattering Models in SPECT3D** TECK LEE, IGOR GOLOVKIN, JOSEPH MACFARLANE, VIKTORIYA GOLOVKINA, Prism Computational Sciences, Inc., Madison, WI 53711 — Spectrally resolved x-ray scattering has become a very effective method for diagnosing electron temperatures, densities, and average ionization in warm dense matter. We present a newly implemented capability to simulate scattering signatures from realistic experimental configurations, which include the influence of plasma non-uniformities and collecting scattered x-rays from a range of angles. The method is based on a formalism developed by G. Gregori. The x-ray scattering modeling has been added to the multi-dimensional collisional-radiative spectral and imaging package SPECT3D. The ability to simulate the emissivity and attenuation of scattered photons within a multi-dimensional multi-volume-element plasma with non-uniform temperature and density distributions adds a major new capability to existing model. We will discuss details of the modeling and show results relevant to ongoing experimental investigations.

Teck Lee  
Prism Computational Sciences, Inc., Madison, WI 53711

Date submitted: 23 Jul 2015

Electronic form version 1.4