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SPECT3D, Imaging and Spectral Analysis Package

Sudhir Kulkarni

Prism Computational Sciences Inc.

sudhir.kulkarni@prism-cs.com

SPECT3D is a collisional-radiative spectral analysis package designed to compute detailed emission, absorption, or x-ray scattering spectra, filtered images, XRD signals, and other synthetic diagnostics. The spectra and images are computed for virtual detectors by post-processing the results of hydrodynamics simulations in 1D, 2D, and 3D geometries. SPECT3D can account for a variety of instrumental response effects so that direct comparisons between simulations and experimental measurements can be made. We will present new features of SPECT3D and highlight their application to the analysis of HEDP experiments. Recent additions to SPECT3D include an updated version of Prism's Atomic Database that incorporates NIST atomic data version 5.0 and improves the consistency for modeling He- and Li-like satellite transitions. X-Ray Thompson scattering calculation times have been improved for the RPA model, and multi-threading has been added for the short characteristics method. Future development plans for SPECT3D will also be discussed.