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Modeling of Dense Plasma Effects in Short-Pulse Laser Experiments TIMOTHY WALTON, IGOR GOLOVKIN, JOSEPH MACFARLANE, Prism Computational Sciences, PRISM COMPUTATIONAL SCIENCES, MADISON, WI TEAM — Warm and Hot Dense Matter produced in short-pulse laser experiments can be studied with new high resolving power x-ray spectrometers. Data interpretation implies accurate modeling of the early-time heating dynamics and the radiation conditions that are generated. Producing synthetic spectra requires a model that describes the major physical processes that occur inside the target, including the hot-electron generation and relaxation phases and the effect of target heating. An important issue concerns the sensitivity of the predicted K-line shifts to the continuum lowering model that is used. We will present a set of PrismSPECT spectroscopic simulations using various continuum lowering models: Hummer/Mihalas, Stewart-Pyatt, and Ecker-Kroll and discuss their effect on the formation of K-shell features. We will also discuss recently implemented models for dense plasma shifts for H-like, He-like and neutral systems.

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