Abstract Submitted
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Atomic Data of Electron Collisional and Radiative Processes and Modeling of non-LTE Krypton Plasmas[1] ARATI DASGUPTA, NRL, ROBERT W. CLARK, Berkeley Scholars Inc., JOHN L. GIULIANI, JACK DAVIS, NRL — We have developed a detailed multilevel atomic model for K-, L- and M-shell krypton, and investigated its impact on the radiation hydrodynamics on a krypton gas puff driven by the redesigned Sandia National Laboratory ZR accelerator. The atomic model employs an extensive atomic level structure to accurately model the dynamics and the spectroscopic details of the emitted radiation. The atomic data was obtained using the state-of-the-art Flexible Atomic Code, and all relevant collisional and radiative atomic processes such as electron-impact excitation, ionization, radiative and dielectronic recombination were included in generating the model. The enormous number of fine-structure levels were judiciously lumped to create a database that is detailed but manageable. We have analyzed the behavior in the krypton K- through M-shell ionization stages using temperature and density conditions that have been predicted in hydrodynamics calculations of implosions.

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