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Modeling and Spectroscopic Analysis of non-LTE Argon Plasmas¹ ARATI DASGUPTA, WARD THORNHILL, JOHN GIULIANI, JACK DAVIS, Naval Research Laboratory, ROBERT CLARK, Berkeley Research Associates, BRENT JONES, STEPHANIE HANSEN, DAVE AMPLEFORD, CHRIS JENNINGS, CHRISTINE COVERDALE, Sandia National Laboratories — We will present a detailed multilevel atomic model for all argon ions and its impact on the radiation hydrodynamics on a argon gas puff driven by the redesigned Sandia National Laboratory ZR accelerator. The atomic model employs an extensive atomic level structure to accurately model the pinch dynamics and the spectroscopic details of the emitted radiation. The atomic data are obtained using the state-of-the-art Flexible Atomic Code, and all relevant atomic processes are included in generating the model. The judiciously lumped atomic model of fine-structure levels is detailed but manageable. We analyze the behavior in the argon K- through M-shell ionization stages using temperature and density conditions predicted in 1-D and 2-D MHD calculations of implosions on ZR.

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