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Design and Simulation of the Radishock Campaign on OMEGA.[1]
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Radishock is a high energy density radiation-hydrodynamic experiment fielded at the OMEGA laser facility. Radishock utilizes the non-invasive spectroscopic temperature diagnostic developed during the COAX campaign and allows us to study the spatial dependence of the interaction between a Marshak radiation wave and an ablatively driven counter-propagating shock. To determine temperature, a Ti-loaded SiO_2 foam is backlit by a Kr-filled CH capsule, resulting in 1s-2p and 1s-3p K-shell absorption spectra after the Ti is ionized. The density measurement requires radiographing the target, for which we use a point-projection backlighter consisting of a V foil mounted to a substrate containing a pinhole. We have recently completed platform development on this experiment and will discuss preliminary experimental results along with challenges and successes in the design and simulation using CASSIO, an Eulerian AMR radiation-hydrodynamics code. Detailed comparisons between the measured temperature and density will constrain our models and validate our codes for radiation transport models.

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