

Shock Ignition Susceptibility to Hot Electrons

2D ALE Simulations, 3D Monte-Carlo Hot Electrons

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Odin is a 2D radiation-hydrodynamics code that has been developed by the University of Warwick and is now capable of doing full direct drive Inertial Confinement Fusion (ICF) implosions. The code has been in development alongside the experiments carried out by Robbie Scott at the OMEGA laser facility LLE, both with the focus of determining the possible effects of hot electrons generated by high intensity Laser Plasma Instabilities (LPI) on a target and the shock generation.

In particular, Shock Ignition (SI) has been the major focus of much of the experiments, simulations and research, and although there has been much study into the 1D implications of hot electrons for shock generation, there has been far less about the implications for a non-isotropic implosions. In my talk I will outline how we have developed the code alongside the OMEGA experiments, and the effect on shock timing and preheat in both 1D and 2D implosions.

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[1] Atzeni, S., Schiavi, A., Antonelli, L. and Serpi, A., 2019. EPJ D, 73(11), p.243.