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Shock Ignition Target Susceptibility to Supra-Thermal Electron Population, 2D ALE Simulations[1] DUNCAN BARLOW, KEITH BENNETT, TOM GOFFREY, TONY ARBER, University of Warwick — Odin is a 2D Arbitrary Lagrangian-Eulerian (ALE) code with tabulated equation of state, implicit thermal conduction and radiation, 3D supra-thermal (hot) electron model (*Solodov, & Betti Phys. Plasmas 15.4 (2008): 042707*), and the option of a simplified laser ray model; all developed at the University of Warwick with aid of the wider UK academic community. Using Odin we simulated a shock ignition target with the aims of investigating how susceptible a non-uniform late stage capsule is to hot electrons and whether the common asymmetry modes seen at NIF and OMEGA exacerbate the already significant issue that hot electrons pose to 1D ignition.
Our project builds on investigations from Atzeni et al. (*EPJ D 73.11 (2019): 243*) and Colatis et al. (*Phys. Plasmas 23.7 (2016): 072703*) looking at 2D non-uniform targets and hot electrons in shock ignition respectively. We model target sensitivity to hot-electron distributions, total energy and angular spread, starting within the safe margins of ignition according to the Ignition Threshold Factor (ITF) (*Hohenberger et al. Phys. Plasmas 22.5 (2015): 056308*). In addition to the threat posed to 1D ignition we find non-uniform targets pose additional opportunity for detrimental effects from hot electrons.

[1]AWE, EPSRC

Duncan Barlow
University of Warwick

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