Addition and Validation of a 2-D Nonlocal Electron Flux Module in DRACO

ALEX PROCHASKA, GREG MOSES, University of Wisconsin-Madison — A nonlocal thermal heat flux module is being implemented in 2-D in the DRACO radiation hydrodynamics code to provide a more accurate representation of the effects of hot electron transport on Inertial Confinement Fusion target implosions. The basic theory, developed in 1-D by Manheimer, Colombant, and Goncharov, has been extended for use in \( x - y \) and \( r - z \) geometries. A Krook model is used for the collision operator, and a perturbative approach is followed to compute the anisotropic component of the distribution function for each electron energy. Taking the \( v^3 \) moment of the distribution function allows the electron thermal heat flux to be computed. The code is being validated through comparison with results obtained using traditional Spitzer-Harm heat conduction.

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