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Sensitivity of Thermonuclear Burn to Charged Particle Stopping Power Models in NIF-like Targets[1] MATTHEW TERRY, GREGORY MOSES, University of Wisconsin-Madison — Accurate treatment of fusion product charged particle transport (in particular the 3.5 MeV alpha particles) is very important for the accurate simulation of ICF ignition, bootstrap heating and burn. Models have been proposed by many authors to account for collisional scattering, dielectric scattering, degeneracy effect, and combined collisional-dielectric behavior. We present 1D calculations comparing the behavior of NIF ignition-like targets for a series of different stopping power models. As each of these models has complicated validity constraints, we keep track of validity violations in terms of the amount of energy deposited while using a theoretically invalid stopping power. For our calculations we use the radiation-hydrodynamics code BUCKY and have developed a stopping power library: Deeks. Deeks implements the stopping power models of Landau; Spitzer; Li and Petrasso; Brown, Preston and Singleton; Kihara and Aono; May and Cramer; Brysk; Skupsky; and a degenerate extension of Li and Petrasso's model in the library Deeks. Additionally, Deeks can mix electron and ion components of different models while retaining validity checks for the hybrid model.

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