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Plasma Stopping Power Measurements Relevant to Inertial Confinement Fusion AARON MCEVOY, HANS HERRMANN, YONGHO KIM, NELSON HOFFMAN, MARK SCHMITT, LANL, MICHAEL RUBERY, WARREN GARBETT, COLIN HORSFIELD, STEVE GALES, AWE, ALEX ZYLSTRA, MARIA GATU JOHNSON, JOHAN FRENJE, RICHARD PETRASSO, MIT, FREDERIC MARSHALL, LLE, STEVE BATHA, LANL — Ignition in inertial confinement fusion (ICF) experiments may be achieved if the alpha particle energy deposition results in a thermonuclear burn wave induced in the dense DT fuel layer surrounding the hotspot. As such, understanding the physics of particle energy loss in a plasma is of critical importance to designing ICF experiments. Experiments have validated various stopping power models under select n_e and T_e conditions, however there remain unexplored regimes where models predict differing rates of energy deposition. An upcoming experiment at the Omega laser facility will explore charged particle stopping in CH plastic capsule ablators across a range of plasma conditions (n_e between 10^{24} cm^{-3} and 10^{25} cm^{-3} and T_e on the order of hundreds of eV). Plasma conditions will be measured using x-ray and gamma ray diagnostics, while plasma stopping power will be measured using charged particle energy loss measurements. Details on the experiment and the theoretical models to be tested will be presented.

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