

Abstract Submitted
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Measurements of the ablator-ion energy-loss channel in direct-drive implosions on OMEGA N. SINENIAN, J. FRENJE, C.K. LI, F.H. SEGUIN, R. PETRASSO, MIT, J. DELETTREZ, C. STOECKL, V. GONCHAROV, LLE — Measurements of ablator-ion spectra produced in direct-drive experiments on the OMEGA laser facility are presented. These ablator-ions are accelerated by the presence of hot electrons generated by laser-plasma interactions. Extensive measurements have been made with two magnet-based charged-particle spectrometers and more recently, with a Thomson Parabola Ion Energy Analyzer. The maximum ion energy and total energy carried by the ions depend strongly on the laser intensity and that as much as 3-4% of the incident laser energy is lost to these ions. The ablator-ion energy spectra from warm (CH) and cryogenic (D₂/DT) targets have been used to infer the temperature of the hot electrons, and the results are in good agreement with hard x-ray inferred temperatures. Using the ablator-ion method combined with modeling of the initial electron energy distribution function, the level of preheat has been estimated. This work was supported in part by DOE, LLE and LLNL.

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