

Abstract Submitted  
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**Observation of Fast Protons in Recent Electron Fast Ignition Experiments at OMEGA** N. SINENIAN, J. FRENJE, F. SEGUIN, C. LI, R. PETRASSO, MIT, W. THEOBALD, C. STOECKL, LLE — Wedge-range-filter proton spectrometers and magnet-based charged-particle spectrometers have been used during integrated fast-ignition (FI) experiments at the OMEGA laser facility. These diagnostics measured a significant population ( $3 \times 10^{13}$ ) of energetic protons ( $E_{p,max} = 7.5 \text{ MeV}$ ) produced from the Au/Cu cone, indicating the presence of strong accelerating mechanisms. Measurements of the proton spectra were conducted at various locations around the FI implosion, for different cone geometries and relative timing between the short- and long-pulse lasers. From these measurements, it was found that the strength of the accelerating fields depends little on cone-tip material and thickness, or even whether the cone-tip is intact when the short-pulse laser is fired. These results have been modeled using a plasma expansion model. This model was used in conjunction with these measurements to infer a hot electron distribution function at each measurement location. This work was supported in part by DOE, LLE and LLNL.

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