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**Simultaneous measurement of proton and electron energy spectra using a Thomson parabola ion spectrometer** K.R. CROMPTON, M.J. SCHEPIS, J.P. SHORTINO, C.G. FREEMAN, SUNY Geneseo, G. FIKSEL, C. MILEHAM, T.C. SANGSTER, Laboratory for Laser Energetics, U. of Rochester — Simultaneous measurements of the energy spectrum of protons and electrons accelerated from the rear side of thin targets illuminated with ultra-intense laser light have been carried out at the Multiterawatt (MTW) laser facility at the Laboratory for Laser Energetics. The particles enter a Thomson parabola ion spectrometer consisting of a permanent magnet and a pair of electrostatic deflector plates. A Fujifilm imaging plate mounted at the rear of the device was used to detect the protons. A thin tantalum foil was placed on top of the imaging plate to prevent all ions other than the protons from reaching the plate. Electrons, with a much smaller magnetic rigidity, are deflected strongly by the Thomson parabola permanent magnet and exit the magnet before entering the electrostatic deflector plates. Another imaging plate placed on top of the permanent magnet was used to detect these electrons. A computer program has been written to analyze the resulting data from the imaging plates. This enables the proton and electron energy spectrum to be determined simultaneously for a particular shot. This work is funded in part by a grant from the DOE through the Laboratory for Laser Energetics.

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