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Time-Resolved Tandem Faraday Cup Development for High Energy TNSA Particles S. PADALINO, A. SIMONE, E. TURNER, M.K. GINNANE, M. GLISIC, B. KOUSAR, A. SMITH, State University of NY Geneseo, C. SANGSTER, S. REGAN, Laboratory for Laser Energetics — MTW and OMEGA EP Lasers at LLE utilize ultra-intense laser light to produce high-energy ion pulses through Target Normal Sheath Acceleration (TNSA). A Time Resolved Tandem Faraday Cup (TRTF) was designed and built to collect and differentiate protons from heavy ions (HI) produced during TNSA. The TRTF includes a replaceable thickness absorber capable of stopping a range of user-selectable HI emitted from TNSA plasma. HI stop within the primary cup, while less massive particles continue through and deposit their remaining charge in the secondary cup, releasing secondary electrons in the process. The time-resolved beam current generated in each cup will be measured on a fast storage scope in multiple channels. A charge-exchange foil at the TRTF entrance modifies the charge state distribution of HI to a known distribution. Using this distribution and the time of flight of the HI, the total HI current can be determined. Initial tests of the TRTF have been made using a proton beam produced by SUNY Geneseo's 1.7 MV Pelletron accelerator. A substantial reduction in secondary electron production, from 70% of the proton beam current at 2MeV down to 0.7%, was achieved by installing a pair of dipole magnet deflectors which successfully returned the electrons to the cups in the TRTF. Ultimately the TRTF will be used to normalize a variety of nuclear physics cross sections and stopping power measurements. Based in part upon work supported by a DOE NNSA Award#DE-NA0001944.

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