Abstract Submitted
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**Angularly Resolved Ion and Electron Spectrometer (ARIES) for high repetition rate, relativistic laser-solid target interactions**[1] JOSEPH SNYDER, Miami University, JOHN MORRISON, KEVIN GEORGE, KYLE FRISCHE, WES ERBSEN, ADAM KLIM, Innovative Scientific Solutions, Inc., SCOTT FEISTER, CSU, Channel Islands, GREGORY NGIRMANG, National Academy of Sciences, Engineering, and Medicine, AFRL, JOSEPH SMITH, CHRIS ORBAN, ENAM CHOWDHURY, Ohio State University, WILLIAM ROQUEMORE, Air Force Research Laboratory — When high intensity laser pulses interact with solid density materials, one outcome is the generation of energetic ions, electrons, and photons. Common experimental conditions result in a broad spray in both energy and direction of the accelerated particles from this interaction. To better understand what conditions govern the energy and directionality of these particles, it is necessary to collect data that has high angular and energy resolution. Using the kHz repetition rate Red Dragon laser with the extreme light group at Wright Patterson Air Force Base, we demonstrate the use of a magnetic spectrometer situated on a semi-circular track. The Angularly Resolved Ion and Electron Spectrometer (ARIES), in its current configuration, collects electron and proton energy spectra through a slit that subtends a $\sim$ 0.5 degree angle at 100 Hz using linear CCDs covered with plastic scintillators. By moving the spectrometer on the track, we are able to extend our angular collection to nearly 135 degrees. We demonstrate the use of the spectrometer in an experiment with a $\sim 10^{19}$ Wcm$^{-2}$ laser interacting with a $\sim$ 400 nm thin liquid sheet target.

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