

Abstract Submitted
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Spatiospectral Analysis of Accelerated Protons from Sub-Micron Liquid Crystal Films¹ CHRISTOPHER WILLIS, Ohio State Univ - Columbus, PATRICK POOLE, Lawrence Livermore National Laboratory, GINEVRA COCHRAN, LINN VAN WOERKOM, DOUGLASS SCHUMACHER, Ohio State Univ - Columbus — Recent studies on ion acceleration have trended towards ultra-thin ($<1 \mu\text{m}$) targets due to improved ion energies and yields from these targets. As discussed here, ultra-thin targets may exhibit unusual spatial distributions in the accelerated ions, such that ion spectrometer data may not be representative of the overall distribution. More complete characterization of the ions requires spectral unfolding of radiochromic film (RCF) data, yielding spatially dependent spectra. Spatiospectral data will be presented from several experiments using sub-micron liquid crystal film targets at the Scarlet (OSU), Texas Petawatt (UT, Austin) and PHELIX (GSI, Darmstadt) laser facilities, including evidence of >75 MeV protons from ~ 300 nm films at PHELIX. Analysis of RCF data is supported by Monte-Carlo modeling of RCF response to ions and electrons using FLUKA. Trends in the resulting ion distributions will be discussed including spatially varying slope temperature and observation of annular ring features at moderate ion energies on many shots.

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