

Abstract Submitted
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Ion Acceleration in High Contrast High Intensity Laser Interaction with Thin Film and Membrane Targets¹ FRANKLIN DOLLAR, TAKESHI MATSUOKA, CHRIS MCGUFFEY, LOUISE WILLINGALE, STEPAN BULANOV, VLADAMIR CHVYKOV, GALINA KALINTCHENKO, PASCALE ROUSSEAU, VICTOR YANOVSKY, ALEC THOMAS, ANATOLY MAKSIM-CHUK, KARL KRUSHELNICK, Center for Ultrafast Optical Sciences, Univ. of Michigan — We present the experimental results on ions acceleration from thin film and membrane targets using the 300TW 30fs HERCULES Laser Facility. The utilization of an F/1 parabolic mirror allow for on target intensities of up to 1022 W/cm². Use of dual plasma mirrors as well as crossed-polarized wave generation allows for the ASE pedestal to peak intensity contrast of over 10¹³. We performed measurements of protons from the back side of foils as well as ions generated from 20-200 nanometers thickness silicon nitride membranes using a Thomson parabola spectrometer coupled to a microchannel plate with readout to a CCD. Detailed 2D-PIC computer modeling of these interactions will also be presented and compared to the experimental data.

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Franklin Dollar
Center for Ultrafast Optical Sciences, Univ. of Michigan

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