

Abstract Submitted
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Near-critical density target experiments for ion acceleration using high-intensity laser pulses¹ PETER KORDELL, PAUL CAMPBELL, ANATOLY MAKSIMCHUK, LOUISE WILLINGALE, KARL KRUSHELNICK, Univ of Michigan - Ann Arbor — The interaction of a short-duration, relativistic intensity laser pulse with a near-critical density plasma can produce a collisionless electrostatic shock capable of accelerating ions. This effect has already been demonstrated using CO2 laser systems ($\lambda = 10 \mu\text{m}$) where the specific plasma density profile enabled the acceleration of quasi-monoenergetic ion beams. We will present our experiments using the T-cubed laser system at the University of Michigan ($\lambda = 1.053 \mu\text{m}$, 6J, 400fs). Due to the shorter wavelength, typical of most relativistic intensity laser systems, a higher plasma density and shorter scalelengths are required to achieve the conditions for shock ion acceleration. The target design and characterization as well as preliminary experimental results will be presented.

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Peter Kordell
Univ of Michigan - Ann Arbor

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