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Critical Density Target Design for Ion Acceleration on the T-Cubed Laser PETER KORDELL, PAUL CAMPBELL, ANATOLY MAKSIMCHUK, Univ of Michigan - Ann Arbor, LOUISE WILLINGALE, Lancaster University, KARL KRUSHELNICK, Univ of Michigan - Ann Arbor — The interaction of an intense laser pulse with a critical density target can form a high Mach number electrostatic shock. Recent experiments on CO2 lasers have demonstrated that such shocks can be used to produce directional, quasi-monoenergetic proton beams. PIC simulations indicate that the our single pulse system, the T-Cubed laser (1.053μm, 6J in 400fs), is both capable of both producing these shocks and accelerating protons to MeV energies. Shock formation and propagation with our system has challenging target peak density and density gradient requirements. We present our target design, an interferometric characterization of its density profile and preliminary experiments on T-Cubed.

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