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**Focusing and transport of high-energy protons in solid targets of different materials** J. KIM, B. QIAO, C. MCGUFFEY, UC San Diego, D.C. GAUTIER, LANL, M.S. WEI, R.B. STEPHENS, E.M. GIRALDEZ, General Atomics, M.E. FOORD, M.H. KEY, H.S. MCLEAN, P.K. PATEL, LLNL, F.N. BEG, UC San Diego — Proton beams must transition into dense plasma for applications ranging from isochoric heating of plasma [1] to imaging implosion dynamics and magnetic fields [2, 3]. However, high-current proton beam interaction with plasma is complex and poorly understood. We present recent experimental and simulation results on the study of proton beam transport within solid density. The experiment was conducted on the TRIDENT laser (75 J, 0.6 ps) at LANL. Focusing proton beams produced from Au partial hemisphere targets heated a secondary solid transport foil with varied thickness and Z-material, specifically, Mylar, Al, Cu and Au. XUV emission from the rear of the transport foil indicated a clear dependence of proton beam transport on Z. Better focusing of the proton beam was achieved after transport through the higher Z foils. 2D PIC simulations using LSP helped to clarify the transport dynamics.The work was performed under the auspices of the U.S. DOE contract DE-SC0001265.

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Joohwan Kim
UCSD

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