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Transport material dependence and structure effects on high-charge proton beams[1] C. MCGUFFEY, UCSD, La Jolla, CA, USA, A. LINK, LLNL, Livermore, CA, USA, D.C. GAUTIER, LANL, Los Alamos, NM, USA, J. KIM, UCSD, La Jolla, CA, USA, S. KERR, UA, Alberta, Canada, G.E. KEMP, OSU, Columbus, OH, USA, R. MADDEN, UCSD, La Jolla, CA, USA, E.M. GIRALDEZ, M.S. WEI, R.B. STEVENS, General Atomics, San Diego, CA, USA, M.E. FOORD, H.S. MCLEAN, P.K. PATEL, LLNL, Livermore, CA, USA, F.N. BEG, UCSD, La Jolla, CA, USA — The ultimate focal size of a proton beam produced by laser-irradiation of a curved foil can be affected by surrounding structures and self-fields [1,2]. The focusing can further be affected as the beam transports into plasma. We present experimental measurements taken with the high intensity TRIDENT laser ($75\ J, 0.6\ ps$) at LANL in which protons were focused into a secondary foil of either Mylar, Al, Cu, or Au. XUV emission from a Au layer on the rear of the transport foil indicated a clear dependence of proton beam focused size on transport foil material with the Au layer producing the tightest spot ($40\ \mu m$) in spite of having the highest Z and areal density. A target consisting of a flat foil was also tested to compare with the curved foils. XUV emission in this case was undetectable. Coupling of hot electron energy to the structure supporting the target will also be discussed.

[1] Bartal, et al., *Nature Physics* **8**, 139 (2012).
[2] M. E. Foord, et al., *Phys. Plasmas*, **19**, 5 (2012).

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