

Abstract Submitted  
for the DPP10 Meeting of  
The American Physical Society

**Proton Beam Focusing Using Novel Structured Targets**<sup>1</sup> T. BARTAL<sup>2</sup>, C. BELLEI, L.C. JARROTT, F.N. BEG, UCSD, M.E. FOORD, M.H. KEY, P.K. PATEL, H.S. MCLEAN, LLNL, K. FLIPPO, D.T. OFFERMANN, LANL, S.A. GAILLARD<sup>3</sup>, ForschungsZentrum Dresden-Rossendorf, A. OTTEN, D. KRAUS, M. ROTH, Technical University of Darmstadt, R.B. STEPHENS, GA — For proton cone-guided FI, the proton source foil is placed within a cone, which can affect the proton beam properties (i.e. focusing, conversion efficiency and maximum energy). The effect of a surrounding structure on the proton beam properties has been investigated using the Trident laser at LANL delivering 80 J in 0.5 ps. High-density carbon hemispherical shells (600  $\mu m$  diameter, 10  $\mu m$  thick) were placed at the end of an aluminum structure, where the segment capped a cylindrical or conical hole and were compared to “freestanding” shells. A stack of RCF and a Cu mesh placed rear target normal was used to diagnose the beam properties. Results show that surrounding the hemisphere with a structure not only changed the maximum proton energy but also reduced the conversion efficiency. Comparison of experimental results with LSP modeling will be discussed.

<sup>1</sup>Performed for US DOE under contract DE-SC0001265.

<sup>2</sup>Also with LLNL and supported by the Lawrence Scholar Program

<sup>3</sup>Currently at LANL

T. Bartal  
UCSD

Date submitted: 16 Jul 2010

Electronic form version 1.4