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Conversion Efficiency Enhancement for Laser Generated Protons in Reduced Mass Targets ALESSIO MORACE, University of California San Diego, University of Milano, TERESA BARTAL, University of California San Diego, LOUISE WILLINGALE, University of Michigan, JOOHWAN KIM, University of California San Diego, ANATOLY MAKSIMCHUK, KARL KRUSHELNICK, University of Michigan, MINGSHENG WEI, General Atomics, BHOOSHAN PARADKAR, University of California San Diego, DIMITRI BATANI, Université de Bordeaux 1, NICOLA PIOVELLA, University of Milano, RICHARD STEPHENS, General Atomics, FARHAT BEG, University of California San Diego — We demonstrate experimentally that minimizing the area and maximizing the isolation of proton beam sources, can increase the efficiency with which they convert energy into protons. The experiment was performed on the Tcubed laser facility at the University of Michigan. The hybrid Ti:Sapphire/ Nd-glass laser delivers up to 5 J on target in 400 fs, with a peak intensity of $2\text{x}10^{19}$ W/cm^2. Micro machined Cu foils, 10 μm thick, were used as reduced mass targets. These 150 μm x 150 μm Cu targets, were connected to the supporting mount foil by identical legs at their corners, of the same thickness and 3 varying widths: 21μm, 42 μm and 84 μm. Detailed experimental data and simulations will be presented. The work was performed under the auspices of the U.S. Department of Energy under contract DE-SC0001265.

Alessio Morace
University of California San Diego, University of Milano

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