Abstract Submitted
for the DPP06 Meeting of
The American Physical Society

Focusing and spectral control of laser-driven, picosecond ion beams B. MANUEL HEGELICH, BRIAN ALBRIGHT, LIN YIN, MARK SCHMITT, Los Alamos National Laboratory, JULIEN FUCHS, LORENZO ROMAGNANI, PATRICIO ANTICI, PATRIK AUDEBERT, Ecole Polytechnique, LULI, TOMA TONCIAN, TIMUR KUDYAKOV, OSWALD WILLI, Heinrich Heine University Duesseldorf, CARLO CECCHETTI, P. WILSON, MARCO BORGHESI, Queens University Belfast — Laser-accelerated ion beams have the great advantage over conventional ion beams of retaining the ultrashort (sub-ps) pulse duration of the drive-laser. Together with the high beam current of kA-MA this makes them unique probes that enable new classes of experiments. In order to facilitate these applications, a better control over the divergence and spectral shape of the accelerated ion beams is desirable. We present results of controlling the shape of the energy spectrum both by target engineering and by using a laser-triggered plasma lens. This last device can also be used to reduce the divergence of a selected charge state at a specific energy range. We present first experimental results where transfered the technique from protons to heavier particles.

B. Manuel Hegelich
Los Alamos National Laboratory

Date submitted: 21 Jul 2006 Electronic form version 1.4