Abstract Submitted
for the DPP11 Meeting of
The American Physical Society

**Fast Ignition with Laser-Driven Ion Beams**[1] JUAN C. FERNANDEZ, B.J. ALBRIGHT, K.J. BOWERS, D.C. GAUTIER, B.M. HEGELICH, C.-K. HUANG, D. JUNG, S. LETZRING, S. PALANIYAPPAN, R. SHAH, L. YIN, H.-C. WU, Los ALamos National Laboratory, J.J. HONRUBIA, Univ. Politecnica de Madrid — We report on the encouraging progress from research on fusion fast ignition (FI) initiated by carbon ions [1,2], a technologically convenient ion species from a target-fabrication perspective with advantageous characteristics for FI [2]. Specifically, we concentrate on the progress towards a quasi-monoenergetic C-ion beam with an ion energy of $\sim 0.5$ GeV, which is necessary to penetrate to the core of the compressed DT fuel. Although all the required ion-beam parameters have not been achieved simultaneously in the present generation of high-energy, high intensity lasers, ignition-relevant performance on key parameters has been achieved in isolation on experiments at our Trident laser facility at LANL. These encouraging results include a laser conversion efficiency into ions $\sim 10\%$, control of the energy spectrum (including a quasi-monoenergetic feature at the required Fi energy), and 1 GeV maximum ion energy.

[1]This work is sponsored by the US DOE.

Juan C. Fernandez
Los ALamos National Laboratory

Date submitted: 27 Jul 2011 Electronic form version 1.4