Abstract Submitted
for the DPP05 Meeting of
The American Physical Society

Laser-driven flyer impact experiments on LULI 2000 facility
NORIMASA OZAKI, M. KOENIG, A. BENUZZI-MOUNAIX, T. VINCI, A. RAVASIO, S. LE PAPE, Laboratoire pour l'Utilisation de Lasers Intenses (LULI), Ecole Polytechnique, France, M. ESPOSITE, Dipartimento di Fisica "G. Occhialini" and INFM, Universita di Milano-Bicocca, Italy, W. NAZAROV, School of Chemistry, University of St. Andrews, United Kingdom, E. HENRY, G. HUSER, Commissariat a l'Energie Atomique (CEA), M. YOSHIDA, National Institute of Advanced Industrial Science and Technology, Japan, K. NAGAI, K.A. TANAKA, Institute of Laser Engineering, Osaka University, Japan — Laser-driven flyer impact experiments have been performed at the LULI. Powerful lasers can launch much faster projectile than with conventional pulse powers, the impact technique generating extreme conditions in materials. Additionally, recent experiments have demonstrated that the scheme allows us to access very interesting states in material phase space. In present experiments, three types of targets; single flyer, multi-layered, and foam-buffered high-Z metal, were used. Impacted conditions in quartz were measured with rear-side (2 VISARs and SOP) and transverse diagnostics (shadowgraph). In the foam-buffered target, Ta foil was accelerated up to a velocity of 45 km/s. Shock wave gradually accelerated in quartz by flyer impact was generated, and the shock wave passing a distinct boundary to a conductive state was directly observed. This method is a way to produce very unique conditions in EOS diagram of material.

Norimasa Ozaki
Laboratoire pour l'Utilisation de Lasers Intenses (LULI)
Ecole Polytechnique, France

Date submitted: 25 Jul 2005 Electronic form version 1.4