Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Magnetohydrodynamics of high-energy-density-plasma in strong magnetic field KAZUKI MATSUO, HIDEO NAGATOMO, TAKAYOSHI SANO, Institute of Laser Engineering, Osaka University, ZHE ZHANG, Institute o Physics ,China, YOUICHI SAKAWA, YUKIKO HARA, HIROSHI SHIMOGAWARA, YASUNOBU AIRIKAWA, SHOUHEI SAKATA, KINGFAIFARLEY LAW, SEUNGHO LEE, SADAOKI KOJIMA, HIROKI KATOU, KEISUKE SHIGEMORI, SHINSUKE FUJIOKA, HIROSHI AZECHI, Institute of Laser Engineering, Osaka University — The magneto-hydrodynamics (MHD) of a high-energy-density-plasma (HEDP) in a strong external magnetic field contains a lot of fundamental and essential physics related to astro- and solar- physics and B-assisted inertial confinement fusion energy development. Especially, hydrodynamic instability in a strong magnetic field is a key physics for success of B-assisted inertial confinement fusion. Hydrodynamic instability growth is affected by strong magnetic field as a result of non-uniform heat flow. Experiments were conducted with a corrugated plastic target that is set between a pair of capacitor-coil. A pair of capacitor-coil targets was used to generate spatially uniform magnetic field. The plastic targets were irradiated by an intense laser pulse having 10^{13} W/cm^2 of intensity. Temporal evolution of perturbation growth was observed with x-ray backlight technique. Enhancement of the perturbation growth in strong magnetic field was observed experimentally, and the result was consistent with hydrodynamic simulation.

Kazuki matsuo
Institute of Laser Engineering, Osaka University

Date submitted: 20 Jul 2016 Electronic form version 1.4