Contribution ID: **423** Type: **Poster**

Compression and Electron Beam Heating of Solid Target under the External Magnetic Field for Fast Ignition

Thursday, 20 October 2016 08:30 (4 hours)

Compression and heating of solid spherical target under the strong external magnetic field is studied using fast ignition integrated interconnecting simulation system (FIˆ3). The simulation results show that (i) a compression of a solid sphere target is stable, and it is possible to achieve a high areal density core plasma. Using GXII scale laser, it will be 60-80 mg/cmˆ2. (ii) The magnetic mirror ratio is less than 4 which does not reflect most of the hot electrons for heating core, and (iii) magnetic beam guiding enhances the heating efficiency and neutron yield which is enhanced to 300-fold compared with the case without magnetic field.

Paper Number

IFE/P5-12

Country or International Organization

Japan

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Session Classification: Poster 5

Track Classification: IFE - Inertial Fusion Experiments and Theory