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Magnetic field compression in an implosion for fast ignition HIDEO NAGATOMO, Osaka University, Institute of Laser Engineering, TOMOYUKI JOHZAKI, Hiroshima University, ATSUSHI SUNAHARA, Institute for Laser Technology, HITOSHI SAKAGAMI, National Institute for Fusion Study, KUNIOKI MIMA, Graduate School for the Creation of New Photonics Industries — In the Fast Ignition research, reduction of the divergence angle of heating electron beam is urgent issue. In the recent researches suggest that the magnetic field plays an important role in the problem, especially for the controlling of the high energy electron transport toward the compressed core plasma. At ILE, Osaka University, generation of a strong external magnetic field ($\sim$10kT) is demonstrated successfully using a laser-driven capacitor-coil target [1]. In such a strong magnetic field we cannot ignore the effect to the reduction of thermal conduction which is strongly related to implosion dynamics, as well as the effect to the hot electron transport. Therefore, magnetic field transport code must be solved with two-dimensional radiation hydrodynamic code simultaneously or strongly coupled with each other when we investigate the effect to the implosion dynamics. Especially, the high Hall parameter effect and the Nernst effect are our most interest [2]. Our simulation code will be extended to simulate the transport of external magnetic field in axial direction. The electron beam reflection due to the mirroring effect in the strong magnetic field can be estimated. Also implosion dynamics and electron transport under such a strong magnetic field will be discussed. Finally, optimum applied magnetic field is proposed for the Fast Ignition. [1] Fujioka S. *et al Plasma Phys. Control. Fusion* **54** 124042, (2012). [2] Nishiguchi A. *et al Phys. Fluid* **28**, 3683, (1985).

Hideo Nagatomo
Osaka University, Institute of Laser Engineering

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