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Generation and Compression of Magnetic Field in Non-spherical cone-guided Implosion for Fast Ignition HIDEO NAGATOMO, Institute of Laser Engineering, Osaka University, TOMOYUKI JOHZAKI, Hiroshima University, ATSUSHI SUNAHARA, Institute for Laser Technology, HITOSHI SAKAGAMI, National Institute for Fusion Science, AKIO NISHIGUCHI, Osaka Institute of Technology, KUNIOKI MIMA, Graduate school for the Creation of New Photonics Industories — In the recent computational simulation research suggest that magnetic field plays an important role in Fast Ignition scheme, especially for high energy electron transport toward the compressed core plasma. Non-spherical implosion can produce the strong magnetic field due to the cross production of grad(Te) and grad(ne). In our previous work, 2-D simulation code for temporal evolution of magnetic field has been developed, and it has been coupled with radiation hydrodynamic code as a postprocessor. In the simulation, we have found that Nernst effect is important in amplifying the field. Finally compressed magnetic field reaches 60MG at maximum compression time. In such strong magnetic field we cannot ignore the effect to the hot electron transport and reduction of thermal conduction which is strongly related to implosion dynamics. Therefore, magnetic field transport code is solved with 2-D radiation hydrodynamic code simultaneously when we investigate the effect to the implosion dynamics.

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