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Diffusion of external magnetic fields into the cone-in-shell target in the fast ignition ATSUSHI SUNAHARA, Institute for Laser Technology, TOMOYUI JOHZAKI, Hiroshima University, HIDEO NAGATOMO, SHOUHEI SAKATA, KAZUKI MATSUO, SEUNGHO LEE, SHINSUKE FUJIOKA, HIROYUKI SHIRAGA, HIROSHI AZECHI, Institute of Laser Engineering, Osaka University, FIREX-PROJECT TEAM — We simulated the diffusion of externally applied magnetic fields intocone-in-shell targetinthe fast ignition. In this ignition scheme, the externally magnetic fields up to kilo-Tesla is usedtoguidefastelectrons to thehigh-denseimploded core,and understanding diffusion of the magnetic field isone of the key issues forincreasingthe coupling efficiency from the heating laser to the imploded core plasma.In order tostudythe profile of the magnetic field, we have developed 2DcylindricalMaxwell equation solver with Ohms law, and carried out simulations of diffusion of externally applied magnetic fields intoacone-in-shell target. Also, we estimated the conductivity of the cone and shell target based ontheassumption of Saha-ionization equilibrium.We present our results of temporal evolution of the magnetic field and its diffusion into the cone and shell target. We also showthat the target is heated by the eddy current. Because of the temperature dependence oftheconductivity, the magnetic fields diffuse into the material withvaryingconductivity.Consequently, the magnetic fields into the cone-in-shell target depend on the temporal profile of the magnetic fields as well asthe electrical and thermal properties of the material.

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