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Simulation study on electron beam guiding by magnetic fields for fast ignition core heating TOMOYUKI JOHZAKI, Hiroshima University, ATSUSHI SUNAHARA, Institute for Laser Technology, SHINSUKE FUJIOKA, HIDEO NAGATOMO, Institute of Laser Engineering, Osaka University, JAVIER HONRUBIA, Universidat Politecnica de Madrid, HIROYUKI SHIRAGA, Institute of Laser Engineering, Osaka University, HITOSHI SAKAGAMI, National Institute for Fusion Scinence, KUNIOKI MIMA, The Graduate School for the Creation of New Photonics Industries, FIREX TEAM — In core heating of cone-guiding fast ignition, the control of fast electron beam having large divergence at the generation is one of the most critical issues. There are some ideas for beam guiding with magnetic fields, *i.e.* self-generated pinching field from $\eta(\nabla \times j_f)$, the field from resistivity gradient $(\nabla\eta) \times j_f$ and externally applied fields in the beam direction. We have proposed "Tongari (pointed) tip cone" for beam guiding due to the resistive fields [1]. In the present paper, to enhance the heating efficiency, we evaluate the dependence of the guiding performance on the tip shape with simulations and then optimize the tip shape. As for the external field, we have successfully generated kT –class magnetic field using capacitor-coil target irradiated by GEKKO-XII laser. We also discuss the core heating performance when such high magnetic fields are applied in addition to the resistive fields.

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