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Magnetic Guiding of Electron Beam in Imploded Spherical Solid Targets[1] TOMOYUKI JOHZAKI, Hiroshima Univ., YASUHIKO SENTOKU, Univ. of Nevada Reno, HIDEO NAGATOMO, Institute of Laser Engineering, Osaka University, ATSUSHI SUNAHARA, ILT, HITOSHI SAKAGAMI, NIFS, SHINSUKE FUJIOKA, HIROYUKI SHIRAGA, ILE, Osaka Univ., TAKUMA ENDO, Hiroshima Univ., FIREX TEAM — In fast ignition, the large divergence of electron beam is one of the most critical issues for efficient core heating. For improving the efficiency in FIREX project, we proposed the electron beam guiding by externally applied kT-class longitudinal magnetic fields. The 2D collisional PIC simulations [1] showed that the electron beam can be successfully focused by the moderately-converging fields (mirror ratio RM < 20). On the other hand, in the implosion simulation [2] for a cone-attached CD shell target with B-field, the mirror ratio reaches RM > 100 at the maximum compression, which is too high for efficient guiding. Recently, we introduced a spherical solid target, where the mirror ratio is moderate since the density compressibility stays low (~ 30) and the magnetic-field compressibility will also be low. In the conference, we will show the integrated simulation results for core heating by fast electron beam with large beam divergence under the compressed core and magnetic fields formed through implosion of a solid spherical target. [1] T. Johzaki et al., Nucl. Fusion 55, 053022 (2015). [2] H. Nagatomo et al., to be published to Nucl. Fusion.

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