Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Multi-stage simulations of electron transport dynamics in magnetized, imploded cylindrical plasma[1] DAIKI KAWAHITO, MATHIEU BAILLY-GRANDVAUX, MAYLIS DOZIRES, CHRISTOPHER MCGUFFEY, SHU ZHANG, Center for Energy Research, UCSD, JAVIER J. HONRUBIA, E.T.S.I. Industriales, Universidad Politecnica de Madrid, Spain, BENJAMIN KHIAR, Department of Astronomy and Astrophysics, University of Chicago, KAZUKI MATSUO, SHINSUKE FUJIOKA, Institute of Laser Engineering, Osaka University, Osaka, Japan, FARHAT N. BEG, Center for Energy Research, UCSD — Fast isochoric heating of a pre-compressed plasma core is an efficient approach to create extreme high-energy-density states such as those required to trigger ignition. In our studies, a cylinder inside a seed magnetic field is imploded with 1.5 ns OMEGA laser pulses to achieve compression to high density and external B-field strength. Then the high intensity OMEGA EP laser is used to produce relativistic electrons to heat the imploded cylindrical plasma. Here, a multi-stage simulation approach comprehensively describes the two kinds of efficient electron transport guided by the self-generated B-field before the maximum compression and the compressed external B-field after that, respectively.

[1]This material is based upon work supported by the Department of Energy, National Nuclear Security Administration under the NLUF program with award number DE-FOA-0001568.

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No Company Provided

Date submitted: 10 Jul 2019 Electronic form version 1.4