Abstract Submitted
for the DPP12 Meeting of
The American Physical Society

Magnetic reconnection in plasma under inertial confinement fusion conditions driven by heat flux effects in Ohm's law ARCHIS JOGLEKAR, ALEC THOMAS, University of Michigan - Ann Arbor, WILL FOX, AMITAVA BHATTACHARJEE, University of New Hampshire — In the interaction of high power laser beams with solid density plasma, there are a number of generating mechanisms that result in very strong magnetic fields. Such fields can subsequently inhibit or redirect energy transport. Here, we present 2D numerical modeling of near critical density plasma using a fully implicit Vlasov-Fokker-Planck code, IMPACTA, which includes self-consistent magnetic fields as well as anisotropic electron pressure terms in the expansion of the distribution function. Magnetic field generation and advection by different mechanisms are studied in the context of heating by multiple laser spots, between which reconnection of magnetic field lines may occur. In particular, we compare the relative importance of Hall, resistivity, and heat flux effects in the magnetic field dynamics of MG strength, oppositely aligned magnetic fields interacting in a plasma under conditions relevant to the wall of a hohlraum.

Archis Joglekar
University of Michigan - Ann Arbor

Date submitted: 23 Jul 2012 Electronic form version 1.4