Abstract Submitted
for the DPP19 Meeting of
The American Physical Society

Effects of an external magnetic field on the generation of stimulated Raman scattering[1] ADAM HIGGINSON, CHRIS MCGUFFEY, UCSD, MARIO MANUEL, General Atomics, MATHIEU BAILLY-GRANDVAUX, KRISH BHUTWALA, JOE STREHLOW, UCSD, BEN WINJUM, ROMAN LEE, FRANK TSUNG, UCLA, SCOTT ANDREWS, FELICE ALBERT, NUNO LEMOS, LLNL, MINGSHENG WEI, LLE, WARREN MORI, UCLA, FARHAT BEG, UCSD — The damping of electron plasma waves propagating in an external magnetic field (B-field) is of fundamental interest for inertial confinement fusion (ICF). Laser plasma instabilities (LPIs) in the low-Z region of an imploding fuel capsule act to transfer laser energy to the background plasma, and a development of our understanding of the fundamental processes involved with LPIs, and techniques to control them, is crucial for the success of ICF. Stimulated Raman scattering (SRS) is particularly detrimental, accounting for the bulk of energy losses on ignition-scale experiments, and remains a fundamental impediment to ICF. We present simulation results showing that the presence of a modest (B = 10 T) B-field around an underdense plasma results in a reduction of SRS reflectivity by up to 50%. We also provide highlights of the first experimental measurements to-date of SRS in the presence of an external B-field, for an underdense Nitrogen target and range of laser intensities relevant to ICF.

[1]This work is supported by the Department of Energy, National Nuclear Security Administration under Award Number DE-NA0003842.

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Date submitted: 03 Jul 2019 Electronic form version 1.4