Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Higher Dimensional Effects in Laser Plasma Interactions Relevant to Inertial Fusion[1] FRANK TSUNG, ROMAN LEE, BEN WINJUM, WARREN MORI, University of California, Los Angeles — In inertial confinement fusion, laser plasma interactions, where the incident laser decays into a backward going light wave and a collective mode of the plasma can reduce laser coupling by reflecting the incident laser and also cause pre-heat which can can degrade compression. In SRS and SBS, the instability itself is primarily one dimensional, meaning that the scattered light and the plasma waves both travel in the same direction as the laser. However, higher dimensional effects, which can be caused by laser speckles used by laser smoothing schemes, or higher dimensional effects in laser plasma interactions near the quarter critical surface such as side-scatter or the two plasmon decay, requires two- or even three-dimensional simulations. In this work, we will present two dimensional and three dimensional multi-speckle simulations of laser plasma interactions relevant to current and future ICF experiments and demonstrate the kinetic nature of these instabilities.

[1]This work is sponsored by DOE, NNSA, and LLNL

Frank Tsung
California State University, Los Angeles

Date submitted: 29 Jun 2020 Electronic form version 1.4