Abstract Submitted
for the DPP20 Meeting of
The American Physical Society

Saturation of Ion Waves in Cross-Beam Energy Transfer[1] AARON HANSEN, DAVID TURNBULL, RUSSELL FOLLETT, JOSEPH KATZ, AVRAM MILDER, JOHN PALASTRO, KHANH NGUYEN, DINO MASTROSIMONE, DUSTIN FROULA, Laboratory for Laser Energetics, U. of Rochester, LIN YIN, BRIAN ALBRIGHT, LANL — The tunable OMEGA port 9 (TOP9) laser on OMEGA was used to perform cross-beam energy transfer (CBET) experiments in a gas-jet plasma. The TOP9 laser is a wavelengthtunable UV beam ($\Delta\lambda$˜3nm) that enables CBET experiments in a stationary plasma. TOP9 was interacted with either one or four other 351-nm UV pump beams to study CBET using the time-resolved transmitted beam diagnostic (TBD). The frequency of the TOP9 beam was set so that the beat frequency generated with the UV pump beams was resonant with the ion-acoustic wave frequency of the gas-jet plasma. At low TOP9 intensities, where ion-wave amplitudes were small ($\delta n/n$ <1.0%), TBD measurements agreed well with linear CBET theory. At high TOP9 intensities, TBD measurements show ion-wave amplitudes that are initially large ($\delta n/n$ >3.0%) and then decrease to smaller amplitudes ($\delta n/n \approx 1.0\%$) over approximately 300 ps.

[1]This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

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Date submitted: 23 Jun 2020 Electronic form version 1.4