Abstract Submitted
for the DPP14 Meeting of
The American Physical Society

Spatial Variation of Two-Plasmon–Decay Laser–Plasma Interactions Found in 3/2 ω Target Images D.H. EDGELL, I.V. IGUMENSHCHEV, D.T. MICHEL, J.F. MYATT, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester — The Thomson-scattering system (TSS) on OMEGA has recorded images of $3/2\omega$ light emitted from implosions. The $3/2\omega$ light results from Thomson scattering of the drive beams off of electron plasma waves (EPW's) driven by the two-plasmon-decay (TPD) laser–plasma interaction at the quarter-critical surface. The images indicate that the $3/2\omega$ emission is not uniform over the surface. The images show distinct patterns that change as the drive beam profile is varied. The fraction of laser energy converted to hot electrons has been shown to empirically scale with the TPD multibeam common-wave gain (CWG) during implosions on OMEGA.[1] A hydrodynamic post-processor code calculates the CWG, including the effects of cross-beam energy exchange on the laser intensity and k vectors of the EPW's driven at the quarter-critical surface. The $3/2\omega$ light Thomson scattered off these EPW's and collected is modeled and compared to the observed images. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

[1]D. T. Michel *et al.*, Phys. Rev. Lett. **109**, 155007 (2012).

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Date submitted: 08 Jul 2014 Electronic form version 1.4