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Ultraviolet Thomson Scattering from Two-Plasmon–Decay Electron Plasma Waves Driven by Multiple Laser Beams R.K. FOLLETT, R.J. HENCHEN, S.X. HU, J. KATZ, D.T. MICHEL, J.F. MYATT, H. WEN, D.H. FROULA, Laboratory for Laser Energetics, U. of Rochester — Thomson scattering is used to probe electron plasma waves (EPW's) driven by the common-wave two-plasmon–decay (TPD) instability near the quarter-critical density. Between two and five laser beams ($\lambda_{3\omega} = 351$ nm) illuminated planar CH targets with 300-μm-diam (FWHM) laser spots with overlapped intensities $\sim 10^{15}$ W/cm^2. A 263-nm Thomson-scattering beam was used to probe densities ranging from 0.2 to 0.25 n_c while k matching the TPD common wave. The Thomson-scattering spectra show two spectral peaks consistent with scattering from forward-scattered TPD common-wave EPW's and Langmuir decay of backscattered TPD waves. Broad TPD driven spectral features were observed in an alternate scattering configuration probing EPW k vectors that do not lie along a TPD maximum-growth hyperbola, consistent with TPD k-space saturation. Experimental results are compared to *ZAK3D* simulations. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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