Abstract Submitted
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Early hot electrons generation and beaming in ICF gas filled hohlraums at the National Ignition Facility* EDUARD DEWALD, PIERRE MICHEL, FRED HARTEMANN, JOSE MILOVICH, Lawrence Livermore National Laboratory, MATTHIAS HOHENBERGER, Laboratory for Laser Energetics, University of Rochester, New York, LAURENT DIVOL, OTTO LANDEN, ARTHUR PAK, CLIFF THOMAS, TILO DOEPPNER, BENJAMIN BACHMANN, NATHAN MEEZAN, ANDREW MACKINNON, OMAR HURRICANE, DEBBIE CALLAHAN, DENISE HINKEL, JOHN EDWARDS, Lawrence Livermore National Laboratory — In laser driven hohlraum capsule implosions on the National Ignition Facility, supra-thermal hot electrons generated by laser plasma instabilities can preheat the capsule. Time resolved hot electron Bremsstrahlung spectra combined with 30 keV x-ray imaging uncover for the first time the directionality of hot electrons onto a high-Z surrogate capsule located at the hohlraum center. In the most extreme case, we observed a collimated beaming of hot electrons onto the capsule poles, reaching 50x higher localized energy deposition than for isotropic electrons. A collective SRS model where all laser beams in a cone drive a common plasma wave provides a physical interpretation for the observed beaming. Imaging data are used to distinguish between this mechanism and $2\omega_p$ instability [2]. The amount of hot electrons generated can be controlled by the laser pulse shape and hohlraum plasma conditions. [1] E.L. Dewald, *et. al., Rev. Sci. Instrum.* **81**, 10D938 (2010). [2] S. Regan et al, *Phys. Plasmas* **17,** 020703 (2010). *This work performed under the auspices of the U.S. DOE by LLNL under Contract DE-AC52-07NA27344.

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