Abstract Submitted
for the DPP16 Meeting of
The American Physical Society

Analysis of data from gold spheres imbedded in a gas bag, illuminated by the URLLE Omega laser[1] MORDECAI ROSEN, J. S. ROSS, G. SWADLING, D. E. HINKEL, C. THOMAS, D. CALLAHAN, O. JONES, G. B. ZIMMERMAN, Lawrence Livermore National Laboratory — In order to make data from an open Au sphere (previously shot in 2006 and 2013) more "hohlraum relevant", we embedded the sphere in a "gas bag", comprised of a thin membrane filled with varying amounts of gas. The Thomson Scattering (TS) data from this new campaign gave clear signatures of when the Au expanded out within this surrounding gas to a given radial point at a given time. We analyze this data via radiation-hydrodynamic simulations that include a post-processor that directly mimics the TS spectra vs. time. Within these simulations, we test various non-LTE atomic physics models, as well as electron transport models. One model that appears to fit this new data is a restrictive flux limiter, mimicking the "Return-Current-Instability"(RCI) which, when operative, is effectively f=0.015. The same ion acoustic turbulence (an outgrowth of the RCI), that enhances scattering, and thus inhibits transport, can also increase absorption. This increase in absorption, applied (speculatively) close by the critical surface, is part of the computational model. This same model showed some success with the bare Au sphere data as well, as reported at APS/DPP last year. We also discuss ion diffusion effects.

[1]This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

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Date submitted: 12 Jul 2016 Electronic form version 1.4