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Assessing the $2\omega_{pe}$ instability in ignition-scale hohlraums WILLIAM KRUER, University of California, Davis, NATHAN MEEZAN, DAVID STROZZI, EDWARD WILLIAMS, LARRY SUTER, Lawrence Livermore National Laboratory, SEAN REGAN, Laboratory for Laser Energetics — In recent experiments[1] Sean Regan, *et. al.* for the first time observed the $2\omega_{pe}$ instability from window plasma in hohlraum targets. In addition, this instability has been predicted to operate near the edge of the inner beams in the ablator plasma and near the edge of the outer beams in the liner plasma. Fortunately only a small fraction of the laser energy was estimated to be at risk. A more quantitative assessment of the energy at risk will here be given. We also explore how strong collisionality restricts this instability in the Au wall plasma. We show that the instability threshold can be significantly reduced for laser beams with an angle of incidence of about 60 degrees due to the swelling of the laser field near its turning point. A simple model is given. It is also shown that for frequently cited plasma conditions, the SRS-scattered light wave can itself drive the $2\omega_{pe}$ instability. This effect is relevant for the nonlinear saturation of SRS and the resulting heated electron generation. Some estimates are given.

[1]S. P. Regan et. al. (submitted to Phys. Rev. Letters)

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