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Scaling and modeling of x-ray preheat in laser heated hohlraums

L. SUTER, O. LANDEN, E. DEWALD, J. SCHEIN, M. ROSEN, Lawrence Livermore National Laboratory — X-rays with photon energy $>1.5\text{keV}$ can preheat the inside of the ablator of an indirect drive ignition capsule. Since the amount of inner ablator preheat affects the hydrodynamic stability of the ablator-DT ice interface, ignition capsules include mid-Z dopants such as Cu or Ge in their ablators to control the inner surface preheat. The amount of dopant depends on the level of x-ray preheat in the hohlraum. In this talk we present measurements of x-ray preheat levels from hohlraum experiments performed with a single quad of NIF (NEL). We show the scaling of x-ray preheat with intensity and with radiation temperature and compare that to predictions made with Lasnex. Finally, we discuss how this affects our expectations for preheat in upcoming NIF ignition hohlraums. This work was performed under the auspices of the U.S. Department of Energy by the University of California Lawrence Livermore National Laboratory under contract No. W-7405-ENG-48.

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