Imaging of hard X-rays from implosions of CH shells at Omega

DANIEL LEMIEUX, GARY GRIM, Los Alamos National Laboratory, BRAD BARBER, University of Arizona, ROBERT ARAGONEZ, DAVID CLARK, CHRIS DANLY, Los Alamos National Laboratory — Making use of the recently designed gamma ray imaging system prototype made for the National Ignition Facility, images of hard X-rays produced in implosions of plastic shells using the Omega laser are presented. Preheating from hot-electrons produced by two-plasmon-decay is a concern for direct drive implosions as it increases the adiabat of the fuel assembly. The hot-electrons undergo bremsstrahlung scattering in the CH material, producing X-rays ranging from a few keV to a few hundred keV. These X-rays are produced in implosions of 875 micron CH shells, filled with \(^3\)He, and are imaged using a 200 micron pinhole onto an LYSO scintillator system. Copper is used as a high-pass filter of the signal. A description of the gamma ray imaging diagnostic will be presented along with images of the hard X-rays.

\(^1\)Prepared by LANL under Contract DE-AC-52-06-NA25396, TSPA

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