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Engineering of Laser Plasma Interaction for hard X ray source optimization SEBASTEIN LE PAPE, LAURENT DIVOL, ANDREW MACKINNON, Lawrence Livermore National Library, DUSTIN FROULA, Laboratory for Laser Energetics, University of Rochester, TAMMY MA, RICCARDO TOMMASINI, Lawrence Livermore National Library, VLADIMIR GLEBOV, Laboratory for Laser Energetics, University of Rochester, HANS HERRMANN, Los Alamos National Laboratory, JIM MCNANNEY, STEPHAN FRIEDRICH, Lawrence Livermore National Library, JIM KNAUER, Laboratory for Laser Energetics, University of Rochester, HANS RINDERKNECHT, Plasma Science and Fusion Center, Massachusetts Institute of Technology, ANDREW MACPHEE, Lawrence Livermore National Library, JOE KILKENNY, General Atomics Corporation, CRAIG SANGSTER, Laboratory for Laser Energetics, University of Rochester, NIC TEAM —
Laser Plasma Interaction at intensities ranging from 7e17 W/cm^2 to 5 e16 W/cm^2 have been used on the NIF to increase X ray production above 40 KeV. Timing of nuclear diagnostics on the NIF requires a bright impulse of X rays above 40 KeV. To generate such an impulse we have used 88 ps, 50 to 100 Joules beams all overlapped onto a 2 mm silver disk. Intensity scaling have shown similar saturation trend as Two Plasmon Decay study (TPD) made on the Omega facility. Based on this observation, an experimental campaign has been carried out on Omega and NIF to optimize the hard X ray source by increasing hot electron production through TPD. Results of this campaign will be presented in this talk. This work was performed under the auspices of the U.S. Department of Energy by the Lawrence Livermore National Laboratory under contract DE-AC52-07NA27344.

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