Abstract Submitted
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Characterization of laser-produced miniature hohlraum XUV sources[1] ANDREW MCKELVEY, THOMAS BATSON, CALVIN ZULICK, FRANKLIN DOLLAR, JOHN NEES, BIXUE HOU, ANATOLY MAKSIMCHUK, VICTOR YANOVSKY, VLADMIR CHVYKOV, ALEXANDER THOMAS, KARL KRUSHELNICK, University of Michigan — Experiments at the National Ignition Facility (NIF) allow the radiative properties of dense, high-temperature matter to be studied at previously unreachable regimes, but are limited by cost and system availability. A scaled down system using ultra-short laser pulses and delivering energy to a much smaller hohlraum could be capable of reaching comparable energy densities by depositing the energy in a significantly smaller volume before ablation of the wall material closes the cavity. The laser is tightly focused through the cavity and then expands to illuminate the wall with an intensity closer to that of a long pulse laser. Experiments were performed on a number of Ti:sapphire tabletop laser system all with short pulses. Cavities are machined in target material using either low laser powers, and then shot in situ with a single full power pulse or using nano-fabricated targets. The emitted radiation is analyzed with an XUV spectrometer. This method may allow studies such as opacity measurements using plasma and radiation with the temperatures comparable to NIF type hohlraums, but with a significantly higher repetition rate and in a university scale system.

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