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High energy and density plasmas produced by UHI interaction and buried-layer targets SOPHIE BATON, LULI, Ecole Polytechnique, France, VINCENT DERVIEUX, BERENICE LOUPIAS, CHRISTOPHE BLANCARD, CHRISTOPHER BOWEN, LAURENT GREMILLET, LUDOVIC LECHERBOURG, JEAN-CHRISTOPHE PAIN, CHARLES REVERDIN, PATRICK RENAUDIN, CHRISTOPHE ROUSSEAUX, VIRGINIE SILVERT, CEA-DAM-DIF, France, PETER ALLAN, COLIN BROWN, MATTHEW HILL, DAVID HOARTY, AWE, UK — The radiative properties of hot (hundreds of eV), dense (rho $\sim$ rho_{sol}) plasmas are of interest in several research fields including inertial confinement fusion and astrophysics. The achieved plasma conditions (temperature, density, LTE/NLTE) have to be well characterized to constrain equation of state and opacity models. Ongoing progresses in ultra-intense laser facilities have led to the experimental demonstration of laser-driven isochoric heating of solid-density, micrometer targets to high temperatures ($>$ 100 eV). Here, we report on a recent experiment carried out with the ELFIE at LULI. The ultra-fast heating of various targets (multi-layered and reduced-mass targets) by using different laser conditions (1w and 2w) was inferred from their thermal x-ray emission. Two main diagnostics were used: a time-integrated Von Hamos crystal spectrometer and a toroidal crystal spectrometer coupled to an x-ray streak camera. According to combined atomic physics and hydrodynamic calculations, the measurements are consistent with densities rho $\sim$ rho_{sol} and maximum temperatures T $\sim$ 450 eV.

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