

Abstract Submitted
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Enhanced ion heating and ion dynamics in short-pulse laser-driven buried-layer targets L.G. HUANG, SIOM, HZDR, CAS, M. BUSSMANN, T. KLUGE, HZDR, W. YU, SIOM, T.E. COWAN, HZDR, TU Dresden — We analyze the dynamics of ion heating in ultra-intense laser-driven buried layer targets. By using layers of significantly different electron density, heating from the bulk return currents can produce extreme pressure gradients, with corresponding expansion/compression inside the solid target. Rapid collisional coupling efficiently heats the ions in the compressed regions, leading to extreme temperatures at about solid density. Particle-in-Cell simulations will be presented which all a study of the precise ion heating dynamics. The prospect of directly probing the buried layer dynamics with coherent diffraction techniques at hard x-ray FELs will be discussed.

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