

Abstract Submitted
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Interaction of intense lasers with nanostructured plasmas JOANA MARTINS, FABIO PEANO, LUÍS GARGATÉ, RICARDO FONSECA, LUÍS SILVA, GoLP/CFP Instituto Superior Técnico, Lisboa, Portugal — Radiation generation from the interaction of intense laser pulses with solid density nanostructured plasmas is analyzed using PIC (two and three-dimensional) simulations performed with OSIRIS 2.0. The role of the relativistic electron dynamics on radiation generation is considered. The influence of the nanostructural design of different targets is studied through simulations, and the generation of radiation is optimized for different target periodicities and densities. Simulations show that the target properties allow for the spectral control of the radiated energy. The simulation results are compared with a theoretical model that takes into account the relativistic electron dynamics in the presence of the laser and the periodic self-consistent fields from the high (ion) charge density regions in the target.

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