

Abstract Submitted
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Enhanced harmonic generation by relativistic laser interaction with a nanostructured target XAVIER LAVOCAT-DUBUIS, JEAN-PIERRE MATTE, INRS-EMT, Un. du Quebec — The interaction of an ultra short (10 fs FWHM), ultra high intensity ($I\lambda^2 > 10^{10}\text{W}$) with a solid density target with a surface grating was simulated with the 2D relativistic PIC code XOOPIC [1], and compared to simulations with a smooth target surface. Very strongly enhanced emission at the wavelength of the grating period and its harmonics was obtained, nearly parallel to the target surface. The laser intensity required to obtain efficient harmonic emission was found to scale approximately with the square of the target density.

[1] J. Verboncoeur, A. Langdon, and N. Gladd, *Comput. Phys. Commun.* **87**, 199 (1995).

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