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Accession number:20115214649856

Title:Tunable radiation source by coupling laser-plasma-generated electrons to a periodic structure

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Source title:Physical Review Letters

Abbreviated source title:Phys Rev Lett

Volume:107

Issue:26

Issue date:December 22, 2011

Publication year:2011

Article number:265003

Language:English

ISSN:00319007

E-ISSN:10797114

CODEN:PRLTAO

Document type:Journal article (JA)

Publisher:American Physical Society, One Physics Ellipse, College Park, MD 20740-3844, United States

Abstract:Near-infrared radiation around 1000 nm generated from the interaction of a high-density MeV electron beam, obtained by impinging an intense ultrashort laser pulse on a solid target, with a metal grating is observed experimentally. Theoretical modeling and particle-in-cell simulation suggest that the radiation is caused by the Smith-Purcell mechanism. The results here indicate that tunable terahertz radiation with tens GV/m field strength can be achieved by using appropriate grating parameters.

Number of references:24