420.

Author

Kan, K (Kan, Koichi); Yang, JF (Yang, Jinfeng); Norizawa, K (Norizawa, Kimihiro); Kondoh, T (Kondoh, Takafumi); Yoshida, Y (Yoshida, Yoichi); Ogata, A (Ogata, Atsushi)

Title

Proposal for generation of high-intensity monochromatic Cherenkov radiation in THz range by femtosecond electron bunches in impurity-doped semiconductor tube

Source

RADIATION PHYSICS AND CHEMISTRY, vol.80, no.12, DEC 2011,1323-1326. Publisher:2011 Elsevier Ltd

Abstract

A novel method to generate high-power THz radiation is proposed. If a beam with a bunch length on the order of 100 fs is injected into an electron-hole plasma of a semiconductor with a plasma frequency on the order of THz, THz wake fields are coherently generated. If the beam moves on the axis of a hollow tube covered by a metal, the frequency spectrum of the radiation is composed of discrete components. Monochromatic radiation is obtained by making only the lowest frequency component coherent.