153
标题: The Rod Degenerate Plasma-Rippled-Wall Waveguide and Its Excitation by Relativistic Electron Beam Injection
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来源出版物: IEEE TRANSACTIONS ON PLASMA SCIENCE 卷: 40 期: 11 页: 3029-3036 DOI: 10.1109/TPS.2012.2214446 子辑: Part 3 出版年: NOV 2012
在 Web of Science 中的被引频次: 0
被引频次合计: 0
引用的参考文献数: 37
摘要: The dispersion relation of electromagnetic waves in a rippled-wall waveguide with a degenerate plasma column protected by an annular dielectric layer is theoretically investigated. By injecting a thin annular relativistic electron beam (TAREB) in the region between dielectric and metallic cylinders in the aforementioned configuration as an energy source, the excitation of terahertz (THz) electromagnetic waves is investigated. Also, the dependence of dispersion relation and time growth rate on the radius of the dielectric, the corrugation amplitude, and period is studied. Furthermore, it is found that the presence of the degenerate plasma rod in the rippled-wall waveguide leads to obtain high-frequency modes in the THz frequency region. Finally, the electric-field profiles in this waveguide are plotted.
入藏号: WOS:000311354100001
语种: English
文献类型: Article
作者关键词: Plasma waveguide; rippled-wall waveguide; thin annular relativistic electron beam (TAREB)
KeyWords Plus: ALIGNED ZNO NANORODS; ELECTROMAGNETIC-WAVES; MAGNETIZED PLASMA; RADIATION; GROWTH; INSTABILITY; TECHNOLOGY; TUBES
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出版商: IEEE-INST ELECTRICAL ELECTRONICS ENGINEERS INC
出版商地址: 445 HOES LANE, PISCATAWAY, NJ 08855-4141 USA
Web of Science 类别: Physics, Fluids & Plasmas
研究方向: Physics
IDS 号: 040VU
ISSN: 0093-3813
29 字符的来源出版物名称缩写: IEEE T PLASMA SCI
ISO 来源出版物缩写: IEEE Trans. Plasma Sci.
来源出版物页码计数: 8