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标题: Free electron terahertz wave radiation source with two-section periodical waveguide structures
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摘要: We analyze a free electron terahertz wave radiation source with two-section periodical waveguide structure (PWS), where the first section (section-I) is used to pre-modulate the electron beam and the second section (section-II) is for terahertz wave generation. By means of theoretical analysis and numerical simulations, we demonstrate that the starting current density of the beam-wave interaction in section-II can be significantly reduced provided that the operation frequency is the harmonic of electron beam's pre-modulation frequency. This kind of source can generate relatively high power terahertz wave radiation but only need moderate beam current density. And it may have great potential application in developing the compact and high power terahertz wave radiation source. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3696969]
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