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标题: Observation of copious emission at the fundamental frequency by a Smith-Purcell free-electron laser with sidewalls
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摘要: An experiment at microwave frequencies confirms the recent prediction that a Smith-Purcell [S. J. Smith and E. M. Purcell, Phys. Rev. 92, 1069 (1953)] free-electron laser equipped with sidewalls can emit radiation at the frequency of the surface wave. The power output is considerably greater than for the previously observed emission at the second harmonic, in agreement with three-dimensional simulations. The dependence of frequency on beam energy and emission angle is in good agreement with three-dimensional theory and simulations. Provided that a reduction in scale can be achieved, a path is open to coherent Smith-Purcell radiation at terahertz frequency. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3696381]
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