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标题: Omnidirectional band gaps in quasiperiodic photonic crystals in the THz region
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摘要: In this work we calculate the emittance spectra of the electromagnetic radiation normally and obliquely incident (s- and p-polarized modes) on a one-dimensional multilayer quasiperiodic photonic structure made up by layered system of positive (SiO2) and negative (LiTaO3) refractive index materials organized in a quasiperiodic (Fibonacci-like) fashion. We model the negative refractive index material by an effective medium, whose electric permittivity epsilon(omega) is characterized by a phonon-polariton frequency dependent dielectric function, while for the magnetic permeability mu(omega) we have a Drude-like frequency-dependent function. The emittance spectra are determined by means of a well known theoretical model based on Kirchoffs second law, together with a transfer matrix formalism. Our results shows that the omnidirectional band gaps appear in the THz regime, in well defined frequency intervals independently of the electromagnetic radiation's polarized modes. (C) 2012 Elsevier B.V. All rights reserved.
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