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标题: Narrow-band terahertz Bragg reflectors based on coupling of propagating and quasi-critical waves

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摘要: We consider a planar system of narrow-band Bragg reflectors in which the transformation of an incident wave into a counterpropagating wave occurs via the excitation of a quasi-critical mode. The period of the structure with a new modification of Bragg mirrors is approximately twice as large as that in the traditional case, in which direct coupling between two counterpropagating waves takes place. Analysis of modified Bragg structures based on the method of coupled waves, in which high-frequency fields are quasi-optical beams, demonstrates the effectiveness of the proposed system of reflectors for the spacing between corrugated plates from 10 to 15 wavelengths λ . These conclusions were confirmed by direct numerical simulation. Such a superdimensionality is sufficient for using modified Bragg reflectors in high-power long-pulse free-electron lasers operating at short-wave frequency ranges up to the terahertz range.

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