Название публикации:
Interaction of Counterpropagating Electromagnetic Waves in an Absorbing Plate Inside a Waveguide

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Сведения об издании:
Technical physics
Том: 58 Выпуск: 4 Стр.: 578-583
DOI: 10.1134/S1063784213040099
Опубликовано: APR 2013
Тип документа: Article

Аннотация:
The interaction of two counterpropagating coherent transverse electric and transverse magnetic electromagnetic waves in an absorbing plate that is placed in a waveguide with an arbitrary transverse cross section is analyzed. It is assumed that the waves with different initial phases are incident on the plate boundaries from two sides. An analytical expression for the interference transmission coefficient with respect to power is derived. Several physical features of the tunneling interference in the plate are revealed. It is demonstrated that a scenario in which an electromagnetic energy flux exists on the left-hand side of the plate and vanishes on the right-hand side or vice versa is possible at certain relations of the initial phases and amplitudes of the counterpropagating waves.

Ключевые слова:
Interference