

Название публикации:

Transition radiation of charged particle in the modulated anisotropic magnetodielectric filling of the waveguide

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Аннотация:

The main results of theoretical investigations related to the questions of transition radiation of a charged particle in a regular waveguide with periodically modulated anisotropic magnetodielectric filling, which were carried out by the author during several years, are summarized in this report. It is assumed that the charged particle moves perpendicular to the waveguide axis with a constant velocity. The analytical expressions for the transverse-electric and transverse-magnetic fields in a first approximation with respect to the small indexes of modulation are found. The energies of transition radiation in the region of "weak" interaction between the radiation wave and the modulated filling in the case of rectangular waveguide are calculated. The analysis of obtained results shows that the fields in the waveguide represent the set of space harmonics with different amplitudes and in the expressions for the energy of transition radiation, unlike for the case of the unmodulated filling, a member proportional to the modulation indexes of the first degree, is added. © 2018 Polish Academy of Sciences Institute of Physics. All rights reserved.

Ключевые слова:

Anisotropy, Filling, Modulation, Waveguides