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The optimal model of crystalline undulator with intervals

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The undulator radiation theory of channeling positrons in the crystalline undulator (CU), which consists of a bent single crystals, separated by intervals, was developed. The calculation formula for the frequency distribution of the radiation formed in CU with intervals was received in [1]. It is shown that undulator radiation may be intensified by the presence of intervals. In this paper, an analytical formula was obtained for the frequency distribution of photons number taking account the polarization of medium. The characteristics of radiation were investigated. The optimum value of the intervals length between monocrystals, for which constructive interference factor has the maximum value, was defined. This result is important for increasing the efficiency of the free electron laser.

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