Radiation from Relativistic Electrons in Periodic Structures "RREPS-15"



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## On space charge effect at charged particles channeling in laser fields

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Periodic field structure in the region of two intense laser beams overlapping is capable of trapping charged particles in channeling regime. This phenomenon is called channeling in a lasers field and attracts growing attention of researchers today. The reason for this is the ability to recreate channeling-like conditions in vacuum avoiding particles-matter interaction and decreasing influence of undesired processes at crystal channeling.

The dynamics of charged particles in two lasers field was described previously both for a single particle and for a beam of noninteracting charged particles. However, at some conditions space charge effect has a crucial influence on the beam dynamics, increasing particles transverse energy and hardening channeling conditions. While both analytical description and numerical simulation for channeling in laser fields were presented earlier, to take into account beam space charge effect in numerical simulation becomes an important issue that allows computer simulations for real processes.

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