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



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## Calculation of radiation by a charge moving in a dielectric tube

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The problem of the generation of electromagnetic radiation generated by the uniform motion of a charge along the axis of the dielectric tube. The tube has a cylindrical symmetry, area 2 (tube body) is a homogeneous dielectric with known values of the dielectric constants (the longitudinal or vortex). It is assumed that a moving charge does not break the cylindrical symmetry of the system. The figure shows a charge as an infinitely thin ring centered on the axis of the tube.

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The problem is solved with the help of Maxwell's equations for the vortex fields. As it is known, the vortex current is only part of the total current, providing by a driving charge. In contrast to the total current it contains non-localized part. This fact is explicitly taken into account in the calculation. The paper discusses the influence of the delocalization of current on the stopping force.

Author: Prof. FILIPPOV, Gennadiy (Cheboksary Polytechnic Institute)

Co-author: Ms LYSOVA, Irina (Chuvash State Pedagogical University)

**Presenters:** Prof. FILIPPOV, Gennadiy (Cheboksary Polytechnic Institute); Ms LYSOVA, Irina (Chuvash State Pedagogical University)

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