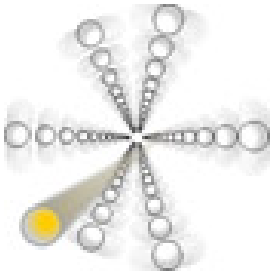

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On the Influence of a Particle's Field Evolution on its Ionization Energy Losses in Thin Layers of Substance

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The process of evolution of electromagnetic field around a particle during its entry to a dielectric medium is considered. The influence on this field of the processes of its dispersion as of an electromagnetic wave packet as well as of its absorption in the substance is considered. The special attention is drawn to the analysis of evolution of Fourier-components of the field around the particle which frequencies are close to the own frequencies of the substance. It is shown that in solids absorption of these Fourier-components occurs on distances from the interface which are much less than the characteristic distances within which the transformation of these components to diverging waves of transition radiation takes place. In gases, however, there is a region of energies of the incident particle within which the change of these components can be defined, primarily, by their dispersion. On the basis of the study of particle's field evolution the question about its energy losses in the boundary layer of substance is considered. Also the regeneration of the field around a particle after its exit from medium is investigated on the basis of the study of the particle energy losses in thin plates situated on different distances from the point of exit along the particle trajectory.

Primary author: Mr TROFYMENKO, Sergii (Akhiezer Institute for Theoretical Physics of NSC KIPT)

Co-author: Prof. SHUL'GA, Nikolai (Akhiezer Institute for Theoretical Physics of NSC KIPT)

Presenter: Mr TROFYMENKO, Sergii (Akhiezer Institute for Theoretical Physics of NSC KIPT)

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