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



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Transition Radiation Of Multiply Charged Ions

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In this paper we solve the problem of the influence of the charge exchange of accelerated multiply charged ions on the characteristics of the transition radiation. Processes capture or loss of electrons leads to the fact that the fields in each of the medium are different ionic currents. Conditions "instant" capture or losses of electrons in the medium allow time to find the appropriate fields from the condition of continuity of the normal and tangential to the interface component. The problem of finding the spectral-angular density of transition radiation ions at the interface of two media (or in thin plates) in a possible capture or loss of electrons is achieved when the traditional way of calculating the flow of the Poynting vector through the remote surface. It is shown that the processes of capture (loss) of electrons by multiply charged ions greatly increase the output of the transition radiation in determining the equilibrium ionic charge in the medium. Physically, this is due to the emergence of an additional contribution of the electrons in the radiation yield, which capture or loses multiply charged ions in the medium. This contribution is similar to the contribution instant start or stop the charges.

References

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Author: MALYSHEVSKY, Vyacheslav (Southern Federal University)

Co-author: Mrs IVANOVA, Irina (Southern Federal University, Rostov-on-Don, Russia)

Presenters: Mrs IVANOVA, Irina (Southern Federal University, Rostov-on-Don, Russia); MALYSHEVSKY, Vyacheslav (Southern Federal University)

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