Channeling 2012



Contribution ID: 22

Type: not specified

Influence of Slowing Down in the Radiator on the Cherenkov Radiation Angular Distributions from Relativistic Heavy Ions at FAIR, SPS and LHC Energies

Friday, 28 September 2012 10:30 (15 minutes)

The calculations of Cherenkov radiation (ChR) angular distributions from relativistic heavy ions (RHI) with very high energies (from 30 GeV/u up to 3000 GeV/u) taking into account their stopping in a radiator are performed for the first time. The results of this work may be used in developing of new experimental proposals on studies of the ChR angular distributions from RHI beams at modern (SPS CERN, LHC) and future (FAIR Darmstadt) accelerators. Moreover, the theoretically predicted new peculiarities of the Cherenkov radiation could reveal new ways of relativistic particles charge and energy identification.

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Session Classification: S5.3 Novel sources: PXR&TR&FEL&Plasma

Track Classification: Novel sources: PXR&TR&FEL&Plasma