

TRD based on highly segmented solid state detectors

Wednesday 17 May 2023 09:15 (25 minutes)

TRDs are commonly used in PID applications, exploiting the threshold Lorentz factor for TR emission. Since TR X-rays have energies from a few keV to a few tens of keV, TRDs are usually equipped with gaseous detectors.

Recently, new techniques for measuring the TR with solid state detectors have been successfully implemented. High-granularity semiconductor pixel or microstrip detectors provide spatial separation of the TR photons and ionization losses, even with limited radiator-detector distances. These detectors may be the basis for novel devices combining precise tracking and PID properties. The presence of a magnetic field could enhance the separation between TR photons and dE/dx losses.

Highly segmented solid state detectors have high efficiency of the TR X-ray detection. Simultaneous measurements of the TR X-ray energies and production angles may significantly improve the PID capabilities and allow to extend the application of TRDs to hadron separation in the TeV momentum region.

Requested length

20 minutes

Author: MAZZIOTTA, Nicola (Universita e INFN, Bari (IT))

Co-author: LOPARCO, Francesco (Universita e INFN, Bari (IT))

Presenter: MAZZIOTTA, Nicola (Universita e INFN, Bari (IT))

Session Classification: Session 5