Contribution ID: **9** Type: **not specified**

Energy Loss Signals in ALICE TRD and Application in Particle Identification

Wednesday, 14 September 2011 11:15 (20 minutes)

The ALICE experiment is one of the four major experiments at the LHC at CERN.
The ALICE TRD is a cylindrical detector system located in radius between 2.9 and 3.7 meters from the beamline and segmented in 6 layers. Each layer consists of a radiator and a drift chamber with pad readout of very good granularity, optimized for Pb-Pb operation. Employing a cosmic-ray trigger and taking advantage of the reconstruction in the complete ALICE setup,
we have measured the energy loss of cosmic muons in the TRD in the momentum range 1 to 300 GeV/c, with and without the contribution of transition radiation.
Together with the energy loss signals from protons and pions measured in proton-proton collisions,
the TRD energy loss spectra are extended down to Lorentz factor $\beta\gamma$ below 1.
In this talk, I will present the details of the measurements and the particle identification using the TRD.

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