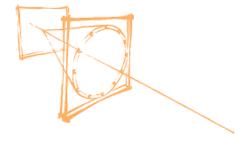
7th International Workshop on Ring Imaging Cherenkov detectors (RICH 2010)



ID de Contribution: 75

Type: Oral presentation

Particle identification with a track fit chi-square

jeudi 6 mai 2010 17:30 (25 minutes)

Tracker detectors can be used to identify charged particles based on their global chi value obtained during track fitting with the Kalman filter. The proposed method is independent of the traditional way of identification using deposited energy.

This approach builds upon the knowledge of detector material and local position resolution, using the known physics of multiple scattering and energy loss. The study using simplified models of present LHC experiments shows that pion-kaon and pion-proton unfolding is possible at low momentum. The separation is better than 1 sigma for p < 0.9 and 1.4 GeV/c, respectively.

Since the chi value of the filter is equivalent to that of a global fit, the method is suitable for any minimum chi^2 track fit that properly models energy-loss and scattering effects. In general, the performance of an experiment is determined by the number of good sensitivity split measurements, and it is also a strong function of particle momentum.

See recent preprint at http://arxiv.org/abs/0911.2624 [physics.ins-det], submitted to Nucl Inst Meth A.

Please indicate "poster" or "plenary" session. Final decision will be made by session coordinators.

plenary

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Classification de Session: Pattern recognition and data analysis

Classification de thématique: Pattern recognition and data analysis