



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

**Auteur principal:** Dr SIKLER, Ferenc (KFKI Research Institute for Particle and Nuclear Physics)

**Orateur:** Dr SIKLER, Ferenc (KFKI Research Institute for Particle and Nuclear Physics)

**Classification de Session:** Pattern recognition and data analysis

**Classification de thématique:** Pattern recognition and data analysis