

The Time Projection Chamber for the ALICE Experiment

Monday, 3 September 2007 16:30 (45 minutes)

ALICE will search for evidence for quark-gluon plasma, the state of matter which is believed to have existed just after the Big Bang, in head-on collisions of lead-ions at the LHC. This requires a very precise tracking capability to record the paths of thousands of particles produced in the collisions. ALICE is therefore built around the largest Time Projection Chamber (TPC) in the world. The task of large acceptance tracking in a heavy ion experiment is similar to that encountered in the NA49 and STAR experiments at the SPS and RHIC respectively. However, the extreme multiplicities of ion collisions at the LHC set qualitatively and quantitatively new demands making new designs indispensable. The construction and assembly of the ALICE TPC were completed in 2006. Before being lowered to the underground experimental area, an extensive commissioning was carried out with cosmic rays and tracks produced by a UV laser system. In January 2007, the TPC was transferred into the ALICE underground area, where it will be put into service by summer 2007 to be ready for first collisions in spring 2008. This paper presents an overview of the main components, with special focus on the front-end and readout electronics, and some of the most crucial aspects addressed by the R&D activities that have preceded the design and construction of the ALICE TPC. The commissioning, including preliminary results from the analysis of data on noise, electron diffusion, drift velocity, and spatial resolution, will be also presented.

Primary author: MUSA, Luciano (CERN)

Presenter: MUSA, Luciano (CERN)

Session Classification: Plenary session P1