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Commissioning and status of the ALICE muon spectrometer

The ALICE experiment at the CERN LHC is equipped with a forward muon spectrometer aimed at studying the production of quarkonia and heavy flavours in p-p and heavy-ion collisions. It consists of a large dipole magnet (integral field 3 Tm), a tracking system made of Cathode Pad Chambers (about 100m2 total active surface, 1.1 million channels) and a trigger system based on Resistive Plate Chambers (about 140 m2 in surface, 21 thousand channels) and on a fast-decision trigger electronics.
Following its installation in the ALICE cavern, the spectrometer underwent a long commissioning and calibration phase in view of the forthcoming LHC p-p data taking.
After a brief description of the ALICE muon spectrometer, the tools and the methods used for calibrating and for checking the correct behaviour of the muon detection system will be presented. The main results of the commissioning will be discussed as well as the readiness of the detector for the beginning of LHC operation.

Summary (Additional text describing your work. Can be pasted here or give an URL to a PDF document):

The ALICE experiment at CERN is aimed a studying heavy-ion collisions at LHC energies. It consists of several detectors, including a muon spectrometer (covering the pseudorapidity region between -4.0 and -2.5) which allows the measurement of heavy quark and quarkonia production via their decay in the muon channel.
The spectrometer consists of a front absorber, a large dipole magnet (maximum field 0.7 T, field integral 3 Tm) a tracking system and a trigger system. The former consists of ten detection planes of Cathode Pad Chambers (CPCs), arranged in five stations, with total active surface of about 100 m2 and a total number of channels of the order of 1.1 millions. The latter is made of four planes of single-gap Resistive Plate Chambers (RPCs) grouped in two stations with total surface of about 140 m2 and about 21 thousand channels. Fast processing of the RPC signal is performed by a dedicated trigger electronics which delivers the L0 trigger signal within 800 ns from the collision time.
The main features of the muon spectrometer will be summarized in the first part of the presentation and its performance will be highlighted. The second and main part will be focussed on the commissioning of the muon spectrometer detectors in the ALICE cavern. The methods and the tools used in the commissioning will be discussed and the main results will be presented. These will include the outcome of the studies (carried out during the ALICE cosmic run) of the behaviour and of the performance of the muon tracking and muon trigger detectors. In particular, for the tracking detector , results concerning the measurements of the electronic noise, of the charge distribution and of the cluster size will be presented as well as the progress on detector alignment. For the trigger system, the focus will be placed on the studies of RPC behaviour (both in streamer and avalanche mode). Results on observables such as the absorbed current and the single rate (as well as their stability in time) will be reported, as well as the first measurements of the detector efficiency carried out "in situ". The status of the RPC front-end electronics and of the trigger electronics will be also highlighted.
In the last part of the presentation, the first cosmic muon tracks triggered and reconstructed in the field of the dipole magnet will be shown and the readiness of the muon spectrometer for the first p-p data taking at the LHC will be discussed.

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