

ALICE TPC CONTROL AND READOUT SYSTEM

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ALICE is a dedicated heavy-ion experiment at CERN LHC. It aims to reproduce the state of matter shortly after the Big Bang, i.e. the quark-gluon plasma. Each lead-lead collision will produce the order of ten thousand new particles. Detailed study of the event requires precise measurements of the particle tracks. An 95m³ Time Projection Chamber (TPC) with more than 500 000 read-out pads was built as the main central barrel tracker. Collisions can be recorded at a rate of up to about 1 kHz. The front-end electronics, designed from FPGAs and custom ASICs, performs shaping, amplification, digitalization and digital filtering of the signals. The data is forwarded to DAQ via 216 1.25 Gb/s fiber-optical links. Configuration, control and monitoring is done by an embedded Linux system. The close proximity of the electronics to the collisions exposes it to radiation, which required radiation tolerant design strategies.

First results on the performance of the front-end electronics and the distributed detector control system are presented.

Primary author: LARSEN, Dag Toppe (University of Bergen)

Co-author: ALICE TPC COLLABORATION, - (CERN)

Presenter: LARSEN, Dag Toppe (University of Bergen)

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