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## Development of the GEM-based Read-Out Chambers for ALICE TPC

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ALICE at the CERN-LHC is planning a major upgrade of the central barrel detectors to cope with an increase of the LHC luminosity in Pb-Pb after 2018. The goal is to record Pb-Pb interactions at a rate of 50-100 kHz after Long Shutdown 2 (LS2), which is a factor of about 100 more the current data acquisition rate. For the Time Projection Chamber (TPC) this implies replacement of the existing MWPC-based readout chambers by continuously operated GEM detectors to overcome the rate limitations imposed by the present gated readout scheme. A prototype of an ALICE Inner Read-Out Chamber (IROC) was equipped with three large-size GEM foils as amplification stage to demonstrate the feasibility of this solution. The GEM IROC was installed within a test field cage with a drift length of 115 mm and commissioned with radioactive sources. The  $dE/dx$  resolution of the prototype was evaluated in a test beam campaign at the CERN PS and is comparable to the resolution of the current (MWPC) IROC. Stability under LHC conditions was tested during ALICE p-Pb beamtime, when the prototype was mounted underneath LHC beam pipe, close to the interaction point. First results from these measurements will be discussed in this contribution. Further R&D of the GEM-IROC, including recent improvements in its design, will be presented as well as the status of building the OROC (Outer Read-Out Chamber) prototype for ALICE TPC. GEM-OROC will have 4 times larger active area, therefore 2 separate foils will have to be glued together to fit the required dimensions. Present ideas to provide a reliable mounting of the foils will be discussed.

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