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## Upgrade of ALICE TPC and its readout electronics for the LHC RUN3 and beyond

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ALICE experiment at the LHC studies high-energy heavy-ion collisions (Pb-Pb) to characterize the strongly interacting matter at extreme energy densities. After the long shutdown of LHC in 2018, RUN3 of ALICE experiment is planned where the Pb-Pb collision rate of 50 kHz is expected. To cope with this high collision rate, the present Multi-Wire Proportional Chamber based TPC will be replaced with the high rate capable Gas Electron Multiplier (GEM) based TPC and continuous readout system will replace the conventional triggered readout.

In the continuous TPC readout, the current signals from the GEM detector pads will be processed using the Front-End Cards (FECs). In the FECs, five custom-made SAMPA ASICs, will process the data from its 160 readout channels (32 channels/each). The SAMPA contains most of the Front-End Electronics such as charge-sensitive preamplifier, shaper, 10 bit 10 MHz digitizer and digital signal processing part. The data from the SAMPA will then be multiplexed and transmitted using GigaBit Transceiver (GBT) via optical links to a Common Readout Unit (CRU). The CRU is an interface to the on-line farm, trigger and detector control system. The first version of the SAMPA chip (MPW1) has been produced in 2014. In the presentation, the performance test results of MPW1 with the GEM detector prototype (10 x 10 cm<sup>2</sup>) will be reported.

### **On behalf of collaboration:**

ALICE

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