Contribution ID: **46** Type: **remote**

Electronics for GEM Detectors - Recent Developments

Tuesday, 9 February 2021 11:10 (20 minutes)

Multi-GEM detectors are widely used for the tracking of charged particles with good spatial resolution at high luminosity, while using only a very low material budget. For the COMPASS experiment at CERN, the third generation of these detectors is currently being constructed, while and the fourth generation is under development.

This talk presents the most recent improvements on the readout and auxiliary electronics for these detectors. A new stabilized high-voltage divider offers both a more stable operation under varying detector currents and an improved protection in case of short circuits in GEM foils. A new revision of APV frontend cards is currently being produced. The new revision includes specialized ESD protection diodes which have a lower parasitic capacitance while offering a better protection against discharges.
The protection circuit was tested with a custom-built discharge simulator which is able to deliver surges with well reproducible characteristics.

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Session Classification: Frond-End