

Micromegas with high-granularity readout: stability and performance at high particle rates

Tuesday, May 25, 2021 5:12 AM (18 minutes)

Micromegas (MM) are being used as tracking detectors in HEP experiment upgrades. For applications at future accelerator experiments, we are developing the MM technology to increase its rate capability and reach a stable and efficient operation up to particle fluxes of 10 MHz/cm².

In resistive MM, the anode plane hosts the readout elements overlaid by an insulator and a resistive plane to reduce the spark intensity. We tested several MM prototypes with a high-granularity readout plane, with 1x3 mm² size pads, and different resistive protection schemas exploiting a pad-patterned layer or two uniform DLC layers.

To cope with the high number of readout channels and allow for the size scalability of the detector avoiding dead areas, we are implementing the integration of the readout electronics in the back of the detector.

We will present measurements to assess the optimal resistive schema and preliminary results on the embedded electronics prototype currently under test

TIPP2020 abstract resubmission?

No, this is an entirely new submission.

Funding information

Primary authors: ALVIGGI, Mariagrazia (Naples University and INFN); CAMERLINGO, Maria Teresa (Università e INFN Roma Tre (IT)); CANALE, Vincenzo (Università e sezione INFN di Napoli (IT)); DELLA PIETRA, Massimo (Università e sezione INFN di Napoli (IT)); DI DONATO, Camilla (Università e sezione INFN di Napoli (IT)); DI NARDO, Roberto (Università e INFN Roma Tre (IT)); IENGO, Paolo (CERN); IODICE, Mauro (INFN - Sezione di Roma Tre); FRANCHELLUCCI, Stefano (Università e INFN Roma Tre (IT)); Prof. PETRUCCI, Fabrizio (Università Roma Tre e INFN (IT)); SEKHNIADZE, Givi (Università e sezione INFN di Napoli (IT))

Presenter: FRANCHELLUCCI, Stefano (Università e INFN Roma Tre (IT))

Session Classification: Sensor Posters: Gaseous Detectors

Track Classification: Sensors: Sensors: Gaseous Detectors