Contribution ID: **812** Type: **Poster Presentation**

Small-pad Resistive Micromegas for Operation at Very High Rates

The resistive micromegas detectors have already proved to be suitable for precision tracking in dense particle rate environment up to few kHz/cm2. Rate capability up to few MHz/cm2 and low occupancy can be achieved by using few mm2 readout pads. Such a rate capability will be required in upgrades of forward muon detectors of LHC experiments as well as in experiments at future colliders.
We present the development of resistive micromegas with O(mm2) pad readout aiming at precision tracking in high rate environment without efficiency loss up to several MHz/cm2.
A first small-pad prototype has been designed, constructed and tested. It consists of a matrix of 48x16 pads. Each pad with rectangular shape with a pitch of 1 and 3 mm in the two coordinates. The active surface is 4.8x4.8 cm2 with a total number of 768 channels.
Characterization and performance studies of the detector have been carried out by means of radioactive sources, high irradiation X-Rays, cosmic rays and test beam. The results will be presented, along with a new development aiming at the construction of fully scalable, thousands-channels small-pad detectors, with embedded front-end electronics.

Experimental Collaboration

Authors: ALVIGGI, Mariagrazia (Universita e INFN, Napoli (IT)); BIGLIETTI, Michela (INFN Roma Tre); CAMERLINGO, Maria Teresa (Universita e INFN, Napoli (IT)); CANALE, Vincenzo (Universita e INFN, Napoli (IT)); DELLA PIETRA, Massimo (Universita e INFN, Napoli (IT)); DI DONATO, Camilla (Universita e INFN, Napoli (IT)); FARINA, Edoardo Maria (Universita e INFN, Pavia (IT)); FRANCHINO, Silvia (Ruprecht-Karls-Universitaet Heidelberg (DE)); GRIECO, Chiara (Universita e INFN, Napoli (IT)); IENGO, Paolo (CERN); IODICE, Mauro (INFN - Sezione di Roma Tre); PETRUCCI, Fabrizio (Universita e INFN, Roma Tre (IT)); ROSSI, Eleonora (Universita e INFN, Roma Tre (IT)); SEKHNIAIDZE, Givi (Universita e INFN, Napoli (IT)); SIDIROPOULOU, Ourania (Bayerische Julius Max. Universitaet Wuerzburg (DE)); Ms VECCHIO, Valentina (Universita e INFN, Roma Tre (IT))

Presenter: IENGO, Paolo (CERN)

Session Classification: Poster session

Track Classification: Detector R&D and Data Handling