Contribution ID: **821** Type: **Parallel**

# Ageing and high rate studies on resistive Micromegas at the CERN Gamma Irradiation Facility

*Saturday, July 7, 2018 5:18 PM (12 minutes)*

Two resistive-strip bulk Micromegas detectors have been installed in the Gamma Irradiation Facility at CERN in 2015.
The primary goal was to assess the performance of the detectors after long term irradiation. This study is particularly relevant in view of the adoption of the Micromegas technology for future upgrades, as in the ATLAS inner muon system. In this region the expected accumulated charge in 10 years of HL-LHC operation has been estimated in 0.2 C/cm$^2$. After 3 years of continuous irradiation more than 0.3 C/cm$^2$ have been accumulated, allowing to draw clear conclusions concerning ageing effects on the detectors. During this period, the detector currents have been monitored and the performance of the detectors has been studied by combining the photon background with muon beam available at the facility. In particular, the spatial resolution and detector gain have been studied up to about 70 kHz/cm$^2$. Complementary to these, a precise estimation of the detectors sensitivity to photons has been obtained by a Geant4 simulation.

**Primary authors:** FARINA, Edoardo Maria (Universita and INFN (IT)); ALVAREZ GONZALEZ, Barbara (Universidad de Oviedo (ES)); BORTFELDT, Jona (CERN); IENGO, Paolo (CERN); SAMARATI, Jerome (CERN); SIDIROPOULOU, Ourania (Julius Max. Universitaet Wuerzburg (DE)); WOTSCHACK, Joerg (Aristotle University of Thessaloniki (GR))

**Presenter:** FARINA, Edoardo Maria (Universita and INFN (IT))

**Session Classification:** Detector: R&D for Present and Future Facilities

**Track Classification:** Detector: R&D for Present and Future Facilities