

Resistive Micromegas demonstrated to be a solid detector technology for HEP experiments (recently employed for the upgrade of the ATLAS Muon Spectrometer)

RHUM (Resistive High granUlaritY Micromegas) R&D project ongoing, aiming to develop a detector able to efficiently work at particle rates up to several tens MHz/cm<sup>2</sup>

The goals of RHUM project are summarized below:

- develop an MPGD able to efficiently work at particle rates up to several tens MHz/cm<sup>2</sup>
- implement a small pad readout to reduce the occupancy
- optimize the spark protection resistive scheme to have stability of operation at high rate/gain
- demonstrate the detector scalability to large surfaces
- simplify the construction techniques for industrial production

Results shown for four different small-pad Micromegas prototypes with different layouts of the spark protection resistive scheme

From tests and comparison among them we reached:

- stable operation up to ~10 MHz/cm<sup>2</sup> with gain ~10<sup>4</sup>
- detector efficiency > 97%
- position resolution < 100 μm

R&D project still ongoing. Future activities will focus on: tracking in high rate environment, detector scalability to larger area, time resolution and ageing studies

