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# Development of a novel Micro Pattern Gaseous Detector for cosmic ray muon tomography

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Cosmic ray tomography consists in using particle detectors to reveal the presence of materials with high atomic number, as radioactive elements or heavy metals. Although the validity of the muon tomography has already been demonstrated, its use on a large scale is still disfavored because of the high cost and complexity of the detectors.
We propose a novel detector (Thick Groove Detector, TGD) specifically designed for this application, having the potential to be easily produced on industrial scale. The proposed detector belongs to the category of MPGDs with an amplification region less than 1 mm wide. In its basic concept the TGD has a larger drift region and a thin amplification gap formed by alternate anode/cathode microstrips layers at different heights. The use of this device has several advantages: it allows for compact scanning stations (reduced transverse dimensions) and reduced operating costs (limited applied voltages and small gas volumes) when compared to other gas detectors as drift chambers and it is competitive from the point of view of the cost production. The potential for industrial mass production makes the TGD a good candidate for the homeland security market. A first 10x10 cm^2 prototype of the detector has been built, divided into four sections with different test geometry. We will illustrate the construction procedure and we will discuss first results in terms of gain and stability in comparison to the performance expected from simulations.

**Primary authors:** PETRUCCI, Fabrizio (ROMA3); IODICE, Mauro (ROMA3); BIGLIETTI, Michela (ROMA3); Dr IENGO, Paolo (LAPP); Ms FRANCHINO, Silvia (PV); MASTROIANNI, Stefano (NA); CANALE, Vincenzo (NA)

**Presenter:** PETRUCCI, Fabrizio (ROMA3)

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