



Contribution ID: 77

Type: **Poster**

Progress in Thick-Groove detector developments

Tuesday, 13 October 2015 16:10 (0 minutes)

Thick-Groove is a recently developed device belonging to the Micro Pattern Gaseous Detector (MPGD) family. It has been specifically designed for cosmic ray tomography, having the potential to be easily produced on industrial scale.

The Thick-Groove detector (TGD) has a large conversion region (few mm up to few cm) and an amplification region less than 1 mm wide. Anode and cathode strips are produced on two single-side PCB boards. The cathode board is then glued on top of the anode one and grooves are obtained by milling of the uppermost (cathode) board. The resulting board has anode and cathode strips alternated at different heights, thus integrating the amplification (grooves) and read-out (anode strips) systems in the same structure. The pitch of both anode and cathode strips is of the order of 1 mm.

The simplicity of the construction process and the potential for mass production makes TGD a good candidate for large-area applications like homeland security market.

Other possible fields of application of the TGD are HEP experiments with limited particle rates and where single plane space resolution of few hundreds microns is sufficient. Typical examples are neutrino and cosmic-ray experiments.

A first prototype of TGD has been realized at CERN and tested with ^{55}Fe radioactive source and with cosmic rays.

We will review the construction procedure of the detector and the first test results obtained on gain stability, efficiency, spark probability and space resolution. Comparisons of experimental results with expected performance from simulations will be shown. Future plans for design and construction optimization and detector characterization will be also described.

Primary authors: PETRUCCI, Fabrizio (ROMA3); IODICE, Mauro (ROMA3); BIGLIETTI, Michela (ROMA3); IENGO, Paolo (CERN); FRANCHINO, Silvia (CERN); CANALE, Vincenzo (NA)

Presenter: IENGO, Paolo (CERN)

Session Classification: Poster session & coffee break

Track Classification: New Developments in MPDGs