



Contribution ID: 51

Type: **Oral contribution**

## Construction and Test of First Full-Size MicroMegas Modules for the ATLAS New Small Wheel Upgrade.

*Monday, 12 October 2015 16:25 (20 minutes)*

In 2015 the first full size resistive-strip MicroMegas operational modules for the ATLAS New Small Wheel upgrade will be realized. The goal is to provide precision muon tracking with spatial resolution below  $100\ \mu\text{m}$  on trapezoidal detector areas between 2 and 3 m<sup>2</sup>. The overall thickness of each detector modules is about 70 mm and the total number of read-out channels is of the order of  $10^4$ .

Each module consists of a quadruplet of four MicroMegas with 5mm drift gaps intervalled with 2 read-out panels with anodes on both sides and 3 drift panels. The panels are realized as 11 mm thick stiffening sandwiches made of 10 mm thick honeycomb, 0.5 mm thick FR4 pcb material sheets as surfaces and aluminium frames.

The active part of the read-out anodes consists of horizontal strips with 0.45 mm pitch. Two out of the four anode planes are built with stereo strips of identical pitch and stereo angles of  $\pm 1.5$  degrees. A sequence of 128  $\mu\text{m}$  height insulating pillars on the read-out planes allows the pretensioned micromeshes to be kept at exact distance from the read-out strip planes.

The drift panels have the cathodes on one or on both sides and the pretensioned micromeshes are glued on very precise frames mounted on the drift panels. During assembly the grounded meshes will finally touch the pillars. An assembly procedure has been developed to build the single panels with the required mechanical precision and to assemble them in a unique module including the four meshes. The mechanical precision of each plane of the assembled module must be as good as 30  $\mu\text{m}$  along the precision coordinate and 80  $\mu\text{m}$  perpendicular to the chamber, a clear challenge for the construction of large size MicroMegas.

The procedure includes the tools to check the overall alignment of the strip positions together with the mechanical quality of the single parts of the modules during construction.

The first constructed modules, the so called module 0s, will be presented and the construction procedure will be reviewed. The results of the quality control checks done during the construction and on the full modules will be presented together with the first tests on cosmic ray tracks.

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**Session Classification:** Contributed talks

**Track Classification:** New Developments in MPDGs