

The Micromegas chambers for the ATLAS New Small Wheel upgrade

Thursday, 28 May 2020 11:18 (18 minutes)

The ATLAS collaboration at LHC has chosen the resistive Micromegas (MM) technology, along with the small-strip Thin Gap Chambers (sTGC), for the HL upgrade of the first muon station in the high-rapidity region, the so called New Small Wheel (NSW). Installation of the first NSW is foreseen in 2020. The construction of the four types of large size quadruplets, with surface areas between 2 and 3 m², will be reviewed. The achievement of the requirements for these detectors revealed to be even more challenging than expected, when scaling from the small prototypes to the large dimensions. We will describe the encountered problems, to a large extent common to other micro-pattern gaseous detectors, and the adopted solutions. Final quality assessment and validation results on the achieved mechanical precision, on the High-Voltage stability during operation with and without irradiation will be presented together with the most relevant steps and results of the modules integration into sectors.

Funding information

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Session Classification: Experiments: Trackers

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