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Construction and Performance Studies of Large Resistive MicroMegas Quadruplets

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In view of the use of MicroMegas detectors for the upgrade of the ATLAS muon system, two detector quadruplets with an area of 0.5 m² per plane serving as prototypes for future ATLAS chambers have been constructed. They are based on the resistive-strip technology and thus spark tolerant. The detectors were built in a modular way. The quadruplets consist of two double-sided readout panels and three support (or drift) panels equipped with the micromesh and the drift electrode. The panels are bolted together such that the detector can be opened and cleaned, if required. Two of the readout planes are equipped with readout strips inclined by 1.5 degree. In this talk, we present the results of detailed performance studies based on X-Ray measurements, cosmic ray- and test-beam measurements at the MAMI accelerator that have been conducted in the past months. In particular, results on reconstruction efficiencies, track resolution and gain homogeneity will be presented.

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