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Performance studies of the ATLAS New Small Wheel MicromeMegas chambers at the CERN Gamma Ray Irradiation Facility

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The ATLAS Experiment main upgrade during the Phase-I long shutdown is the replacement of the present innermost stations of the forward muon spectrometer, the Small Wheel, with a completely new station called New Small Wheel (NSW). The precision measurements of forward muon tracks with the New Small Wheel are performed with MicroMegas MPGD detectors consisting of a planar (drift) electrode, a ⊠ 5 mm thick gas gap, acting as conversion and drift region, and a thin metallic mesh at 128 μm distance from the readout electrode, creating the amplification region.
The first production chambers have been recently tested at the CERN Gamma Ray Irradiation Facility (GIF++) to study the detector performances in terms of current linearity, voltage stability and spike rate up to fluxes comparable to the ones expected during the LHC High-Luminosity operation. Results from the Gamma Ray Irradiation Facility, as well as a complete picture of the chambers integration phase at CERN, will be presented.

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