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Performance studies of Micromegas detectors in ATLAS with Run3 data

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The Micromegas detectors are part of the New Small Wheel (NSW) system of the ATLAS experiment, the largest upgrade project of Phase-1. Together with sTGC detectors they provide trigger and tracking capability in the innermost station of the end-cap part of the Muon spectrometer.

The Micromegas detector of ATLAS cover an active area of about 1280 m^2 , has 1024 HV channels and 2.1 M readout channels, representing the largest Micro-Pattern Gaseous Detector system ever built.

The two NSW have been installed in ATLAS in time for the start of Run3, went through a detailed commissioning phase during 2022 and are now contributing to the ATLAS data taking.

In this presentation, after an introduction of the NSW, a series of latest results regarding simulations, reconstruction, performance and first data obtained with Run 3 will be reported.

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