

# Ready foLHC Run III - The ATLAS New Small Wheel and the MicroMegas chambers performances

*Monday 12 December 2022 12:00 (20 minutes)*

The two New Small Wheels (NSW) for the upgrade of the Atlas Muon Spectrometer are now installed in the experiment and ready to collect data in LHC Run III, started in July 2022. The NSW is the largest phase-1 upgrade project of ATLAS. Its challenging completion and readiness for data taking is a remarkable achievement of the Collaboration. The two wheels (10 meters in diameter) replace the first muon stations in the high-rapidity regions of ATLAS and are equipped with multiple layers of two new detector technologies: the small strips Thin Gap Chambers (tGCh) and the MicroMegas (MM). The latter, belong to the family of Micro Pattern Gaseous Detectors (MPGD), for the first time used in such a large scale in HEP experiments. Each detector technology will cover more than 1200 m<sup>2</sup> of active area. The new system is designed to assure high tracking efficiency, reduction of fake trigger rates and precision measurement of muon tracks, also in view of the higher background environment foreseen for Hi-Lumi LHC. In this presentation, the motivation of the NSW upgrade and the steps from the commissioning to the data taking together with the first results using the Run III data will be presented, focusing on the MicroMegas performances.

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**Session Classification:** Session 2