

# The ATLAS New Small Wheel Simulation and Reconstruction Software and Detector Performance Studies

*Friday, July 31, 2020 9:30 AM (15 minutes)*

In view of the ongoing series of LHC luminosity upgrades, the New Small Wheels (NSW) will replace the present innermost stations of the ATLAS endcap Muon spectrometer with new detector assemblies. The aim of the NSW is to maintain the same level of efficiency and momentum resolution of the present detector in the expected higher background level and to keep an acceptable muon trigger rate maintaining the same muon momentum threshold of the present detectors. The NSW are equipped with two completely new detector technologies: the small strips Thin Gap Chambers (sTGC) and the Micromegas (MM). Currently the series production of the detectors is well advanced, the integrations in sectors and assembly on the wheels is in progress. Quality control tests, including cosmic ray's data taking are in full swing. The software for simulation and reconstruction of the NSW is also well advanced. The detectors response is simulated and compared with real data from cosmics and test-beam, nominal geometries and misalignments and deformations are implemented, as well as other possible deviations from ideal operating conditions. Finally, trigger and reconstruction performance studies are carried out in different configurations of the detectors and background levels. After an overview of the software implementation and the adopted strategies for simulations and reconstruction, a summary of the studies will be presented.

## I read the instructions

## Secondary track (number)

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