

# The Micromegas construction project for the ATLAS New Small Wheel

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In order to meet the requirements of the upcoming luminosity upgrade of the LHC, the Micromegas (MM) technology was selected to be adopted for the New Small Wheel (NSW) upgrade, dedicated to precision tracking. A large surface of the forward regions of the Muon Spectrometer will be equipped with 8 layers of MM modules forming a total active area of 1200 m<sup>2</sup>. The NSW is scheduled to be installed in the forward region of  $1.3 < |\eta| < 2.7$  of ATLAS during the second long LHC shutdown. The NSW will have to operate in a high background radiation region, while reconstructing muon tracks as well as furnishing information for the Level-1 trigger. The project requires fully efficient MM chambers with spatial resolution down to 100  $\mu\text{m}$ , a rate capability up to about 15 kHz/cm<sup>2</sup> and operation in a moderate (highly inhomogeneous) magnetic field up to  $B=0.3$  T. The required tracking is linked to the intrinsic spatial resolution in combination with the demanding mechanical accuracy.

An overview of the design, construction and assembly procedures of the Micromegas modules will be reported. Results and characterization with cosmic rays of the first series module will also be presented.

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