

Studies to Improve Muon Chamber Performance in Small Wheel

The Small Wheel muon chambers covering the forward region, i.e. high pseudo-rapidity η , have the highest rate. ATLAS plans to replace this package with new chambers before LHC luminosity goes beyond its original design value of $10^{34} \text{ cm}^{-2} \text{ sec}^{-1}$. Reducing background will provide more operational headroom for any design. Viewed differently, reduced background will make it easier (and cheaper) to design and fabricate suitable detectors. The SLAC ATLAS group has already made several improvements to the background with improvements to shielding. This project will examine further possible improvements.

Specific work involves describing the additional shielding in a [FLUGG](#)-based simulation program using the [Geant4](#) toolkit, run the program to get new predictions, and use [Root](#) to make plots to evaluate its performance.