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Study of the sTGC pad performance with cosmic rays for ATLAS Muon Phase-I upgrade XIONG XIAO, University of Michigan — ATLAS plans to replace the current innermost endcap muon station with a New Small Wheel (NSW) detector. The NSW detector aims to handle the increase in data rates and harsh radiation environment expected at the High-Luminosity LHC. Both Micromesh gaseous structure chamber (MM) and small-strip Thin Gap Chamber (sTGC) will be used to provide complementary trigger and tracking functionality. The sTGC detector has three different detector types: pads, strips and wires. The sTGC on-detector electronics includes 768 strip frontend boards, 768 pad frontend board and 512 Level-1 Data Driver Cards (L1DDC). There are a total of 192 4-layer chambers that need to be integrated and commissioned. The total number of trigger and readout channels is about 354k. Extensive work is ongoing with the sTGC on-detector electronics integration and commissioning at CERN. Various problems have been found and solved. We expect to finish the work for 96 chambers by the end of February 2021. The integration and commissioning flow and the performance of frontend electronics and detectors will be presented.

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