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## Development of Trigger and Readout Electronics for the ATLAS New Small Wheel Detector Upgrade

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The present small wheel muon detector at ATLAS will be replaced with a New Small Wheel (NSW) detector to handle the increase in data rates and harsh radiation environment expected at the LHC. Resistive Micromegas and small strip Thin Gap Chambers will be used to provide both trigger and tracking primitives. Muon segments found at NSW will be combined with the segments found at the Big Wheel to determine the muon transverse momentum at the first-level trigger. A new trigger and readout system is developed for the NSW detector. The new system has about 2.4 million trigger and readout channels and about 8,000 Front-End boards. The large number of input channels, short time available to prepare and transmit data, harsh radiation environment, and low power consumption all impose great challenges on the design. We will discuss the overall electronics design and studies with various ASICs and high-speed circuit board prototypes.

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