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The configuration system of the ATLAS Trigger

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The ATLAS detector at CERN's LHC will be exposed to proton-proton collisions at a rate of 40 MHz. To reduce the data rate, only potentially interesting events are selected by a three-level trigger system. The first level is implemented in custom-made electronics, reducing the data output rate to less than 100 kHz. The second and third levels are software triggers with a final output rate of 100 to 200 Hz. A system has been designed and implemented that hosts and records the configuration of all three trigger levels at a centrally maintained location. This system provides consistent configuration information to the online trigger for the purpose of data taking as well as to the offline trigger simulation. The use of relational database technology provides a means of flexible information browsing, easy information distribution across the ATLAS reconstruction sites, and reliable recording of the trigger configuration history over the lifetime of the experiment. The functionality of this design has been demonstrated in dedicated configuration tests of the ATLAS level-1 Central Trigger and of a 600-node software trigger computing farm. We present an overview of the main system components, including a sophisticated, JAVA-based front end to populate and maintain the configuration information, and report on the current status.

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