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ATLAS Trigger operation and optimization

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During the first running period of the LHC, the ATLAS trigger system has been used to select events from proton-proton collisions at centre of mass energies of up to 8 TeV and is designed to reduce the event rate from 40 MHz, the LHC design frequency, to around 400 Hz. The system employs a three-level configuration, where the first level is hardware-based and subsequent levels are software-based, to select events using specific object signatures and global event signatures.

In this presentation, an overview of the operational aspects of the ATLAS trigger is given, including the design, strategy and evolution of the trigger menu and the monitoring infrastructure. Additionally, the performance and optimisation of the trigger is discussed, particularly in the context of increasing luminosity and pileup.

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