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The ATLAS trigger menu: from Run 2 to Run 3

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The ATLAS experiment aims to record about 1 kHz of physics collisions. This is achieved by using a two-level trigger system to select interesting physics events while reducing the data rate from the 40 MHz LHC crossing frequency. Events are selected based on physics signatures such as the presence of energetic leptons, photons, jets or large missing energy. The wide physics programme carried out by ATLAS is achieved by running around 1000 triggers during data taking. A Trigger Menu is the compilation of these triggers, specifying the physics selection algorithms to be used during data taking and the rate and bandwidth a given trigger is allocated. Trigger menus must reflect the physics goals for a given run, and also must take into consideration the instantaneous luminosity of the LHC and limitations from the ATLAS detector readout and offline processing farm. We will describe the design criteria for the ATLAS trigger menu. We discuss several aspects of the process of planning the trigger menu, including how rate, bandwidth, and CPU constraints are folded in during the compilation of the menu. Improvements made during the run to react to changing LHC conditions and data taking scenarios are discussed and we conclude with an outlook on how the trigger menu will evolve with the detector upgrades currently being installed for the start of Run 3.

I read the instructions

Secondary track (number)

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