The ATLAS Run-2 Trigger Menu

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A trigger menu…
specifies both which types of events to select in the hardware (L1) and software (HLT) triggers and how many of each type to save

**Physics goals**

**System limitations**

**Physics menu composition**

*At L = 2 x 10^34 cm^-2 s^-1*

Representative sizes of full event streams intended for physics analysis

- Main physics stream
  - B-physics and Light States (BLS) stream
  - multi-lepton triggers targeting low-mass resonances.
  - Small overlap with Main stream and flexibility by analyses allows for delayed processing to circumvent offline reconstruction limitations.
- Express stream: triggers for di-electron final states

**Highlights of 2018 changes:**

- Muon isolation loosened to mitigate effects from increasing pileup
- Tau identification updated to use recurrent neural network (RNN) tuning that improves efficiency
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**End-of-fill**

Nominal menu is designed for L = 2 x 10^34 cm^-2 s^-1, but 85% of data was collected with L ≤ 1.7 x 10^34 cm^-2 s^-1, and more than 40% with L ≤ 1.2 x 10^34 cm^-2 s^-1

**Other menus**

**Configurations** other than nominal p–p collisions have their own trigger menus optimised for the targeted research program, e.g.:

- **Heavy ions:** events with varying centrality selected by total energy triggers, in addition to dedicated muon, electron, photon, jet, and b-jet triggers.
- Ultra-peripheral \( \gamma+\gamma \) and \( \gamma+A \) collisions are selected by triggers for dedicated topologies

**References:**

https://twiki.cern.ch/twiki/bin/view/AtlasPublic/TriggerOperationPublicResults