The Phase-1 Upgrade of the ATLAS Level-1 Calorimeter Trigger

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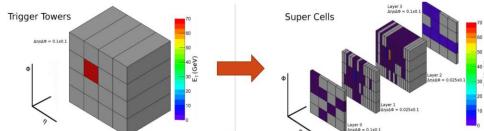On behalf of the ATLAS collaboration

- The ATLAS level-1 calorimeter trigger (L1Calo) is a hardware-based system that identifies events containing calorimeter-based physics objects, including electrons, photons, taus, jets, and missing transverse energy.

- In Run 3:
  - Challenging pileup environment
  - New LArg electronics: 10x higher granularity with super-cells

- Improved L1Calo algorithms benefit from higher granularity, higher resolution and shower shape information resulting in better performance

- Significant programme of planned hardware upgrades

- 3 new feature identification systems:
  - electron Feature Extractor (eFEX)
  - jet Feature Extractor (jFEX)
  - global Feature Extractor (gFEX)

- Upgraded Level-1 Topological (L1Topo) processor

- New readout interfaces: L1Calo ReadOut Driver (ROD) & Front-End Link eXchange (FELIX)

- Tile Rear Extension (TREX) module

- Fiber-Optic eXchange (FOX)

- Run 2 legacy L1Calo system will run in parallel with Phase-1 system at the beginning of Run 3

Run2   Run3