

# Optimizing Anti- $k_T$ in the ATLAS Trigger System

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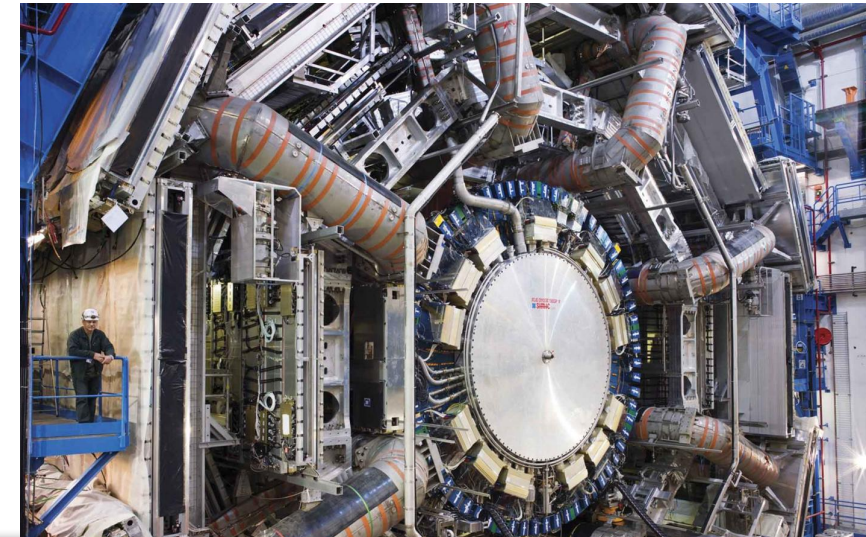
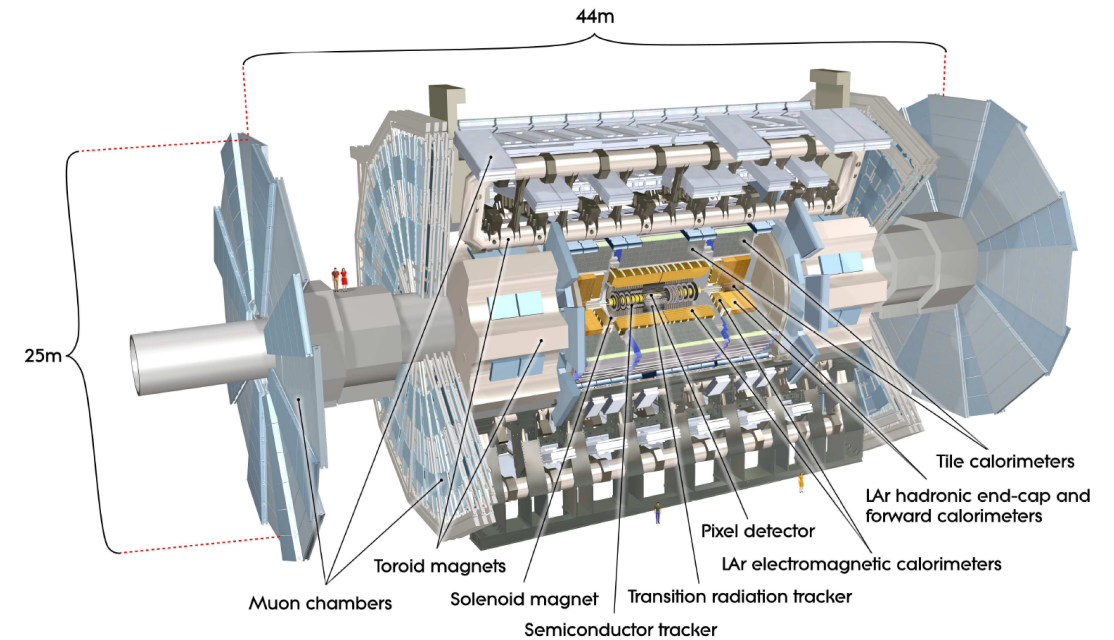
University of Michigan Talk 1  
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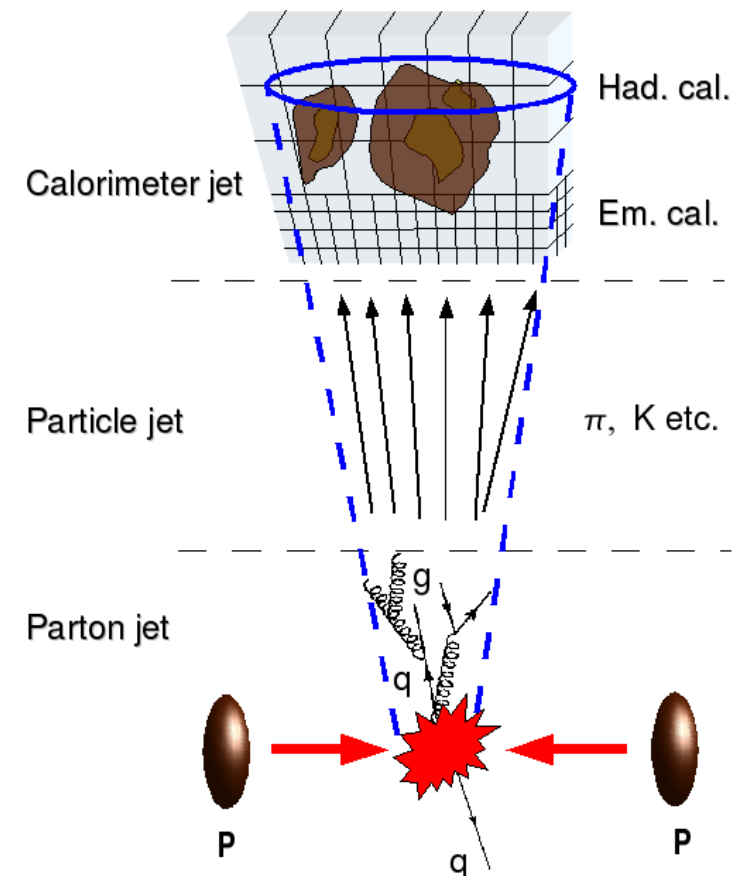
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- ATLAS is a multi-purpose detector at the LHC
- Used to confirm/improve Standard Model measurements, as well as look for new physics
- Has many components that are used to detect particle collisions
- I work within the Calorimeters



- Millions of collisions happen each second in the detector
  - Trigger System sifts through for interesting events and discards the rest
- A jet is a shower of particles produced by the hadronization of a quark or gluon
- Anti- $k_T$  is the most popular jet-finding algorithm



- Anti- $k_T$  is an algorithm that finds jets by iteratively running over energy readings from the calorimeters
- Goal: reduce latency of jet finding to below  $2.5 \mu s$  by running anti- $k_T$  on an FPGA
- Full algorithm gives too much latency even on FPGA
- Need to approximate the algorithm somehow

- Off to a slow start
- Have obtained samples of di-Higgs events to run analyses on
- Data on jets in these events will help determine extent to which the anti- $k_T$  algorithm can be approximated

