**TADA Workflow**

- The TAG based monitoring is using a hybrid software approach
- Ntuples (so-called TAG files) are produced centrally at Tier-0 as part of prompt production chain
- Very condensed event information:
  - Leading (4) e, (4) μ, (2) τ, (2) γ, (6) jets, missing transverse energy (MET) info, trigger counters, global event info, etc.
- For each object we store:
  - Kinematics
  - Bit-encoded info on particle identification, quality, isolation, etc.

**Analysis level data quality monitoring**

- TADA monitors a lot of physics/trigger/detector performance aspects in different channels involving jets, photons, W, Z, tops, missing energy, ...
- Jet energy calibration:
  - γ-jet back-to-back events are a standard handle on access jet energy calibration
  - A selection of γ-jet events is implemented in TADA to monitor the p_T balance defined as p_T^γ/|p_T^γ \cdot \cos(\Delta\phi)|
  - The mean of the p_T balance distribution vs p_T^γ and data taking run are shown in Figures 1+2
- Monitoring of the stability of the physics performance across the data taking period:
  - Mean of Z→μμ mass vs run number is sensitive to mis-alignment effects (Figure 3)
  - Yield of leptonic top pair events normalized to luminosity vs run is shown in Figure 4, for the channel e+μ+ (b)jets+missing energy

**Fast search for new physics**

- TADA can monitor channels from a broad spectrum of physics channels, including standard model, top, Higgs, exotics and SUSY searches
- Distributions for different channels, like invariant mass of ee and di-jet events are displayed on the webpage (Figure 5+6)
- TADA is as well used to spot interesting events, e.g. 8.8 TeV di-jet events in 2015 as shown in Figure 7

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**Abstract**

The ATLAS Experiment at the LHC is recording data from proton-proton collisions with 13 TeV center-of-mass energy since spring 2015. The collaboration is using a fast physics monitoring framework (TADA) to automatically perform a broad range of fast searches for early signs of new physics and to monitor the data quality across the year with the full analysis level calibrations applied to the rapidly growing data.

TADA is designed to provide fast feedback directly after the collected data has been fully calibrated and processed at the Tier-0 [1], the CERN Data Center. The system can monitor a large range of physics channels, offline data quality and physics performance quantities near final analysis level object calibrations.

TADA output is available on a website accessible by the whole collaboration that gets updated twice a day with the data from newly processed runs. Hints of potentially interesting physics signals or performance issues identified in this way are reported to be followed up by physicists or combined performance groups.

The poster reports as well about the technical aspects of TADA: the software structure to obtain the input TAG files, the framework workflow and structure, the webpage and its implementation.

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**References**