

Summary of 2025 Activities

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IFIC, CSIC-UV

ATLAS TileCal/TDAQ-IFIC End of Year Meeting





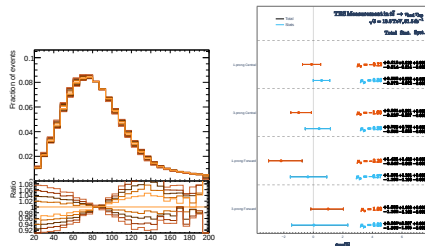
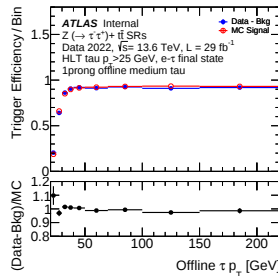
- Completion of my QT in February on scale factor measurements (MC23A/2022), including Offline RNN ID, modelling of GNTau input variables, and a dedicated TRIG9 derivation format for the Tau Trigger

- L1 cTAU isolation efficiency measured with the T&P method
- Offline GNTau ID scale factor measurement for the tau trigger
- Validation of V06/V07 ntuples
- Paper in preparation
ANA-TRIG-2024-01



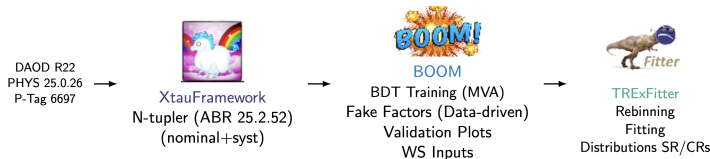
- Extension of the Tau Energy Scale measurement using the $t\bar{t}$ channel

- Tau CP kickoff task: [ATLTAU-1876](#)
- Based on the visible mass reconstructed from the hadronic tau candidate and the nearest b -jet,
 $m_{\text{vis}}(\tau_{\text{had}}, b_{\text{nearest}})$
- χ^2 and likelihood fits using shifted variations of $m_{\text{vis}}(\tau_{\text{had}}, b_{\text{nearest}})$, with $\alpha_{\text{TES}} = \pm[1\%, 2\%, 3\%, 4\%, 5\%]$

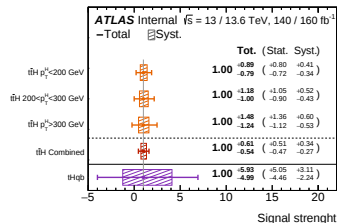
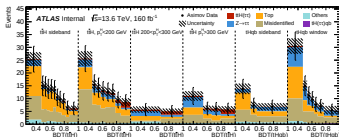


Measurement of $t\bar{t}H$ and $tHqb$ production with $H \rightarrow \tau_{\text{had}}\tau_{\text{had}}$

- Goal: Measure $t\bar{t}H$ production and explore sensitivity to $tHqb$ in the $H \rightarrow \tau_{\text{had}}\tau_{\text{had}}$ channel using Run 2 and partial Run 3 data ($\sim 300 \text{ fb}^{-1}$)

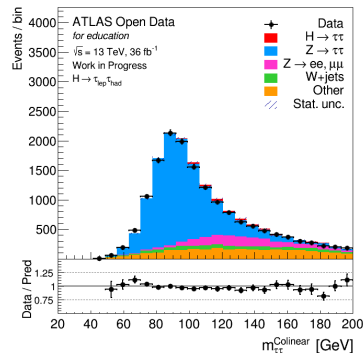


- Event selection: Two hadronic taus with GNTau ID, ≥ 5 jets, and ≥ 1 b -jet
- Fit strategy: Binned likelihood fit to BDT score distributions, using 2-POI ($\mu_{t\bar{t}H}$, μ_{tHqb}) and 4-POI STXS configurations



- Tau Combined Performance Group Workshop at CERN: summary of Tau Trigger activities ([link](#))
- Trigger $e/\gamma/\tau$ expert on-call shifts
- 2025 European School of High-Energy Physics:
 - F. Maltoni, Higgs, Top and Beyond [link](#)
 - A. Soto Ontoso, Heavy-Ion Physics [link](#)
 - T. Peterson, Statistics and Machine Learning [link](#)

- IFIC Summer School supervision: project using ATLAS Open Data for $H \rightarrow \tau_{\text{lep}} \tau_{\text{had}}$ with an introduction to BDTs ([link](#))
- ROOT Users Workshop 2025 in Valencia, training session contribution ([link](#))



BACKUP



ATLAS
EXPERIMENT