Triggers for exclusive processes with photons and electrons in ultra-peripheral lead-lead collisions in the ATLAS experiment in Run 3

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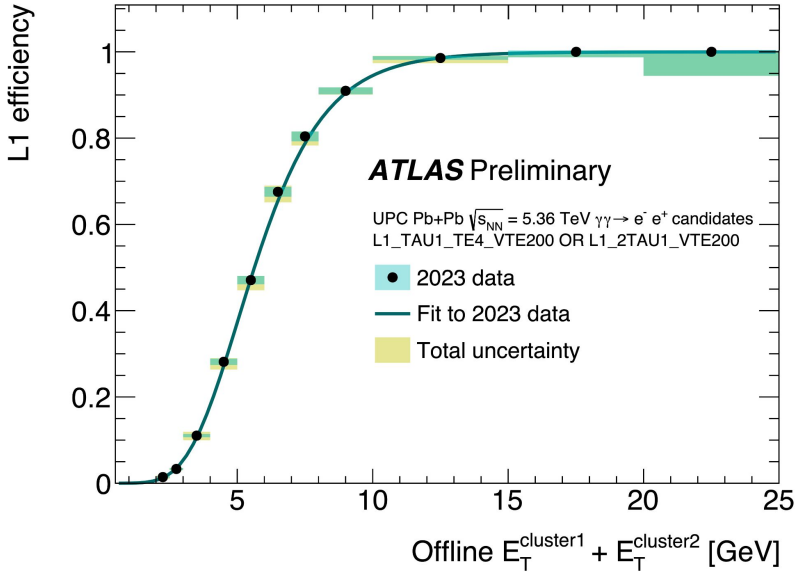
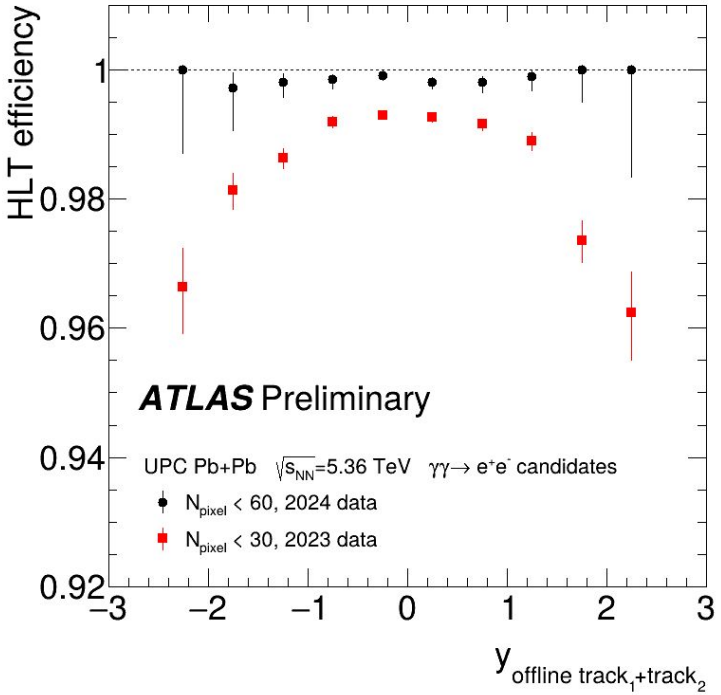
L1 trigger efficiency studies

- 2023 UPC Pb+Pb data
- UPC can induce a wide variety of exclusive final states in lead–lead (Pb+Pb) collisions – dileptons, dijets, and diphotons, e.g. **light-by-light scattering**
- The performance is calculated for the log OR of two triggers, L1_TAU1_TE4_VTE200 and L1_2TAU1_VTE200, and is compared with 2018 reference data.
- The poster discusses the full performance analysis of the L1 trigger with a systematic uncertainty study



HLT trigger efficiency studies



- A comparison between **2023** and **2024** vpix trigger efficiency
- This trigger is essential for measuring photons, i.e. **light-by-light scattering**
- Veto for events with more than 30 pixel hits was introduced in Run 3 after vpix15 was deemed inefficient during the Run 2
- Veto for events with more than 60 pixel hits was introduced in 2024 in order to increase performance and reduce dependence on rapidity