

Measuring $\text{BR}(\tau \rightarrow e \nu_\tau \nu_e)$ and $\text{BR}(\tau \rightarrow \mu \nu_\tau \nu_\mu)$ from Belle II data

Update on lepton rho topology preselection

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Discrepancy in reconstruction

$(\tau \rightarrow e/\mu)(\tau \rightarrow \pi\pi^0(\pi^0))$ topology

Current problem:

Discrepancy is observed when comparing Data & MC after reconstruction between my results and Paul's internal note.

Already found contributors:

- Wrong trigger setup used (Zuzanna's trigger have a higher eff. for 2-photon processes)
- Paul used event cuts in reconstruction I didn't

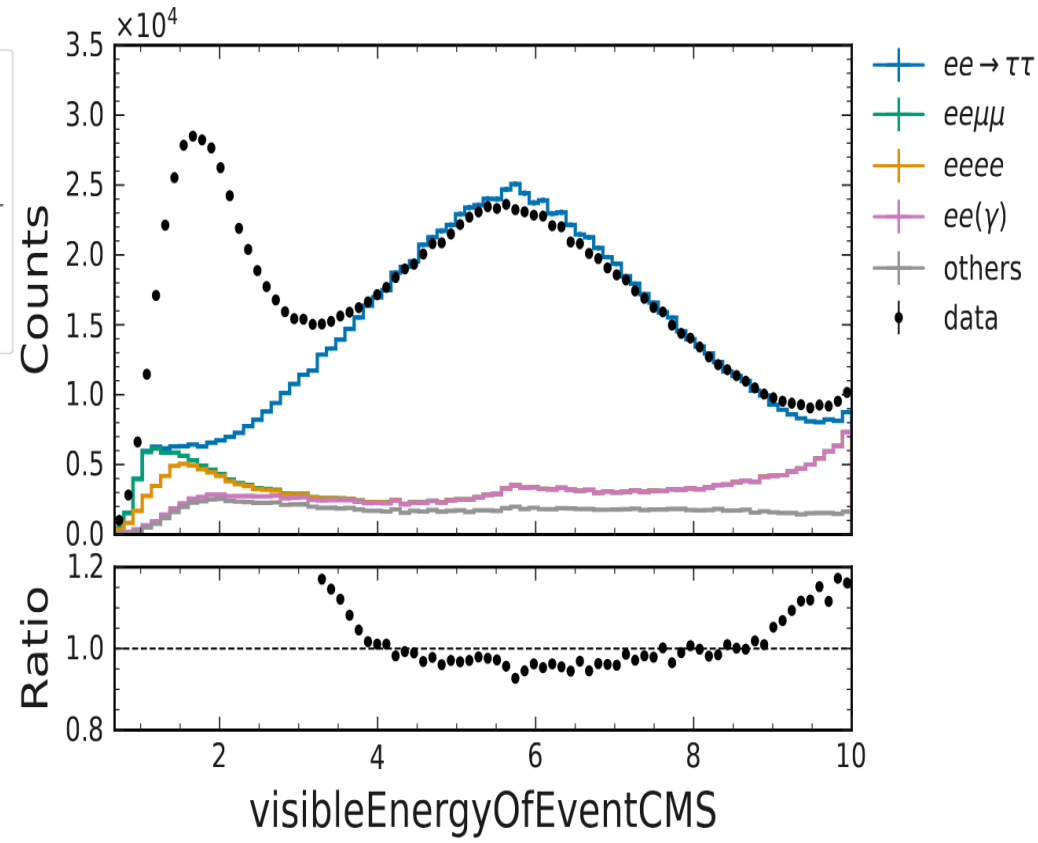
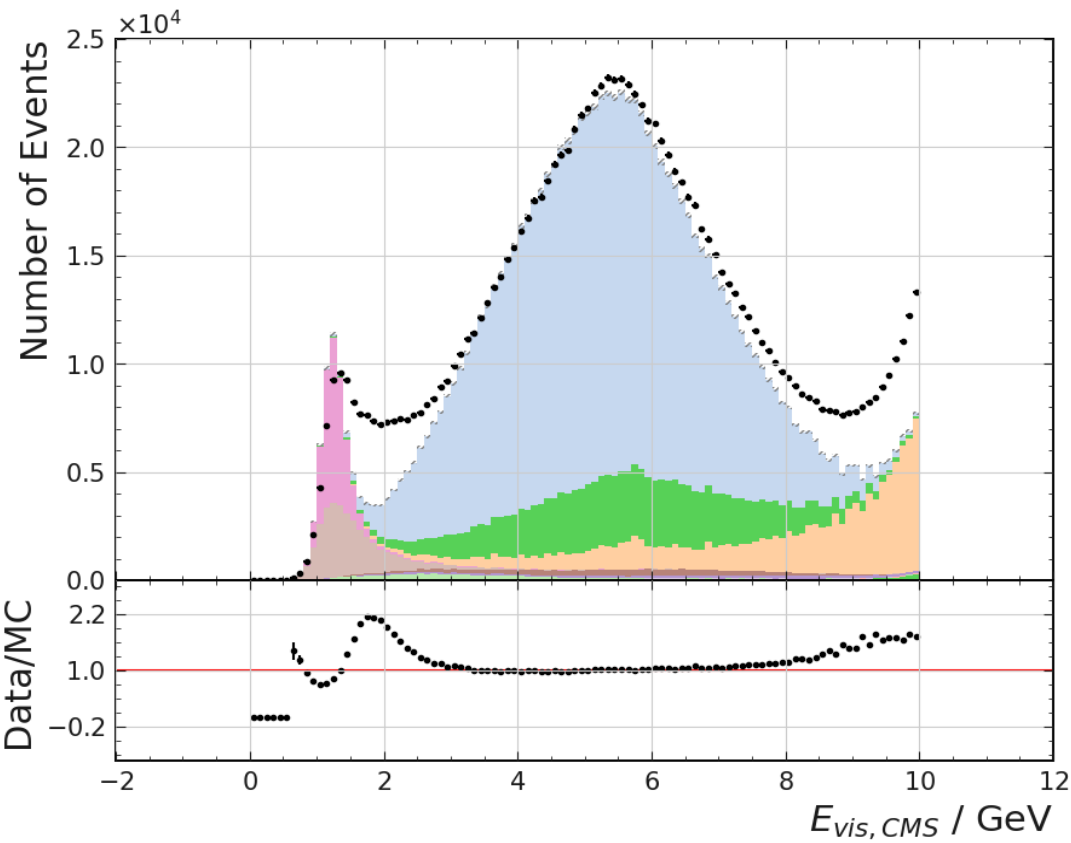
Correcting triggers and adding cuts does help but can't explain everything

Current cuts for μ signal:

- $0.6 \leq \text{visibleEnergyOfEventCMS} < 10$
- $0.2 \leq \text{missingMomentumOfEventCMS_theta} < 3.0$
- $0.2 \leq \text{maxPt}$
- $\text{trackOpeningAngleCMS} < 3.135$

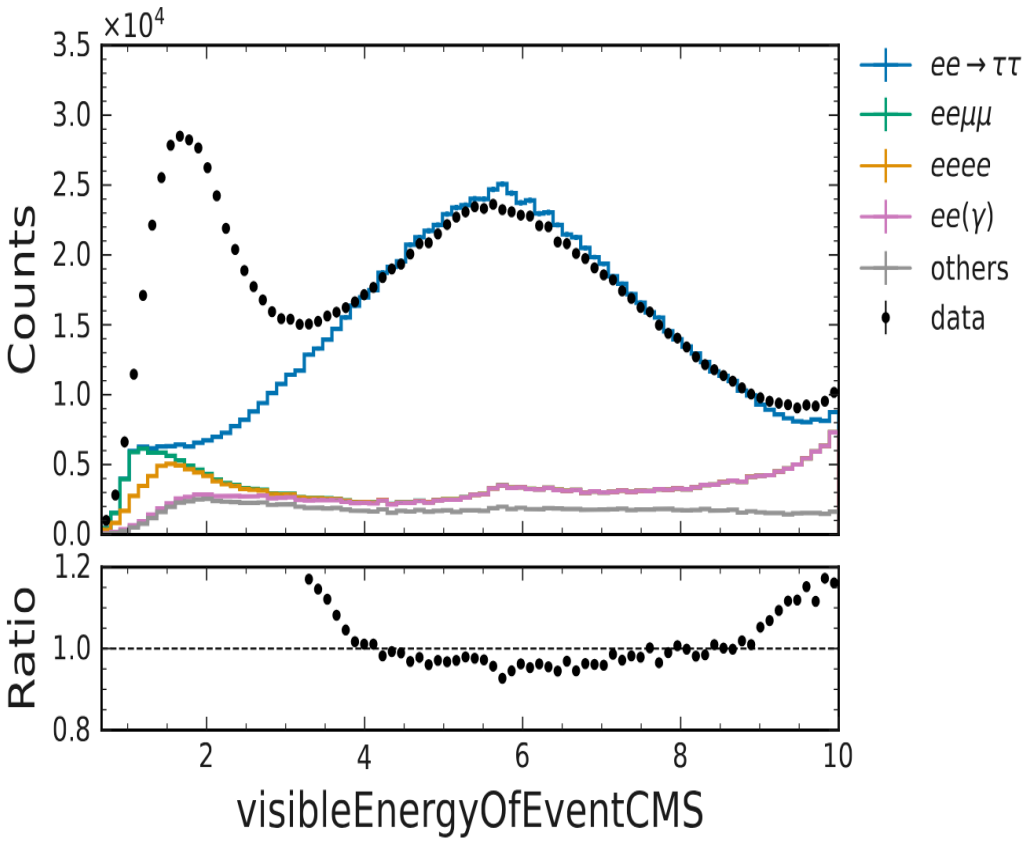
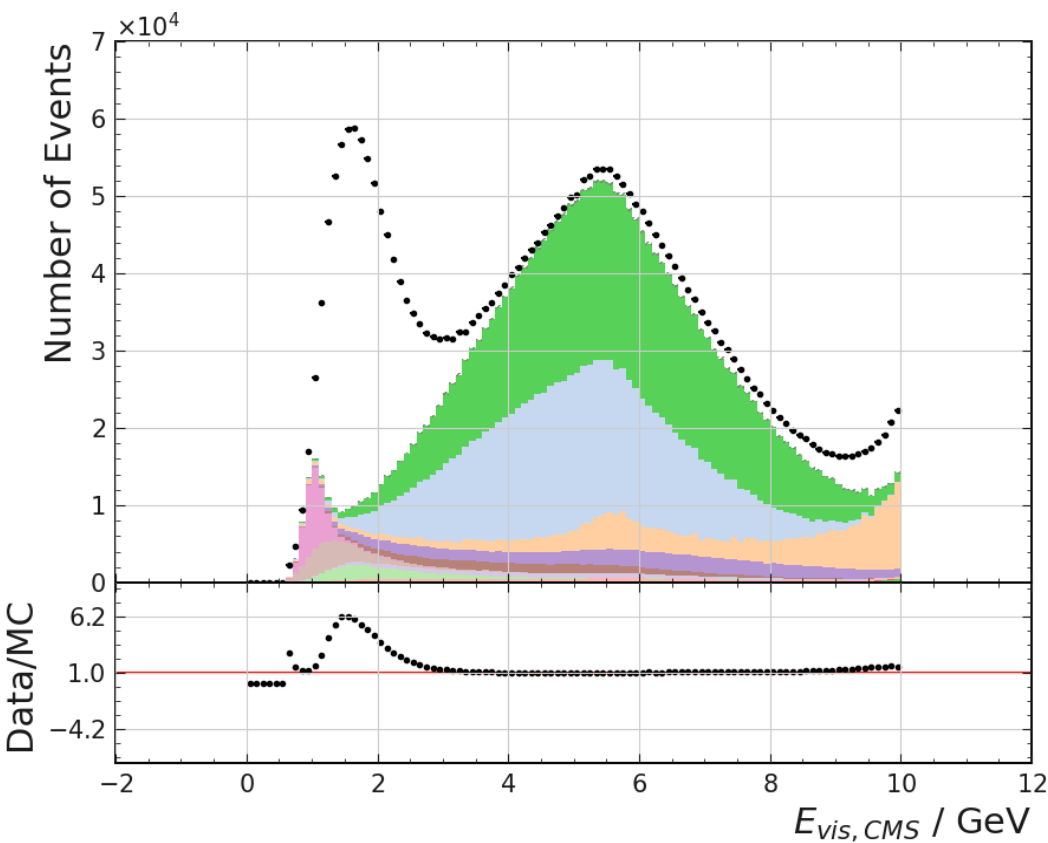
Discrepancy in reconstruction: My reconstruction

($\tau \rightarrow e/\mu$)($\tau \rightarrow \pi\pi^0(\pi^0)$) topology



Discrepancy in reconstruction: Paul's reconstruction

$(\tau \rightarrow e/\mu)(\tau \rightarrow \pi\pi^0(\pi^0))$ topology



Discrepancy in reconstruction: Both compared

$(\tau \rightarrow e/\mu)(\tau \rightarrow \pi\pi^0(\pi^0))$ topology

