

Update Status of ACTS

2020-5-18

Outline

- Module
 - CKF
 - Vertexing
- Detector
 - MaterialMapping
- Visualization
 - EDM
 - Geometry

CKF

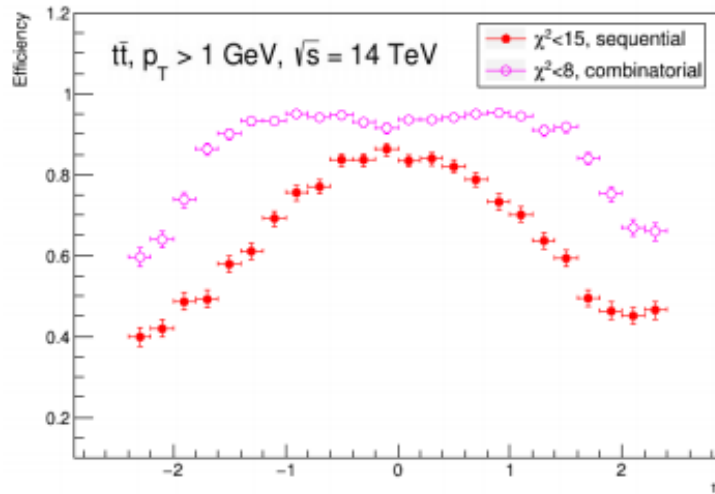
- Combinatorial Kalman filter tracking is in master

- Track finding efficiency: $\frac{N_{\text{reco}}(\text{selected, matched})}{N_{\text{truth}}(\text{selected})}$

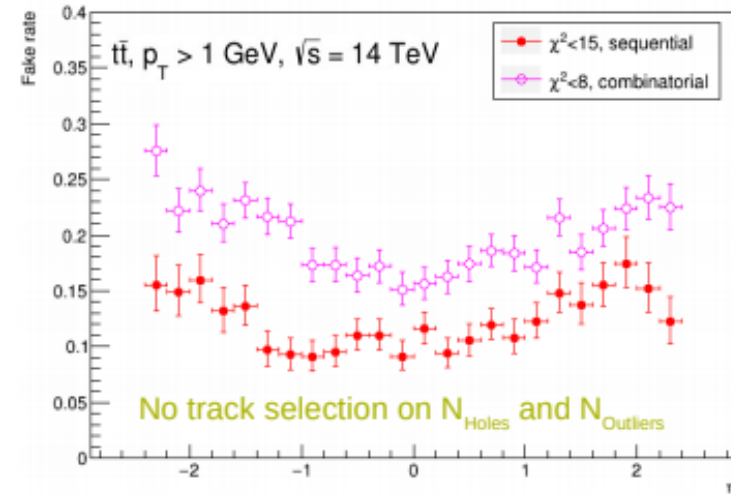
- Fake rate: $\frac{N_{\text{reco}}(\text{selected, unmatched})}{N_{\text{reco}}(\text{selected})}$

- Reco-truth matching: $\frac{N_{\text{hits}}(\text{Majority})}{N_{\text{hits}}(\text{Total})} > 0.5$
- Simple track selection: $n_{\text{Hits}} > 5, |\eta| < 2.4$

CKF efficiency vs. η
TrackML detector, ATLAS B field



CKF fake rate vs. η
TrackML detector, ATLAS B field



Vertexing

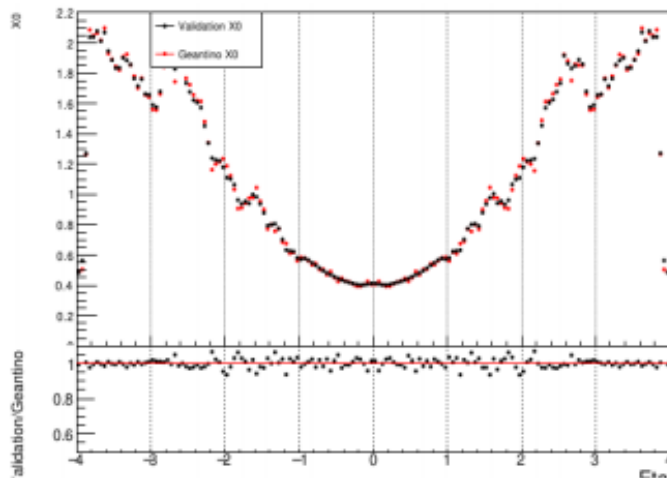
- Gaussian Track Density seedFinder
- Adaptive Multi-Vertex Fit (AMVF)
- Iterative Vertex Finder(IVF)
- Deep learning Development on going

https://indico.cern.ch/event/831165/contributions/3717103/attachments/2024665/3386509/acts_vertexing_slides.pdf

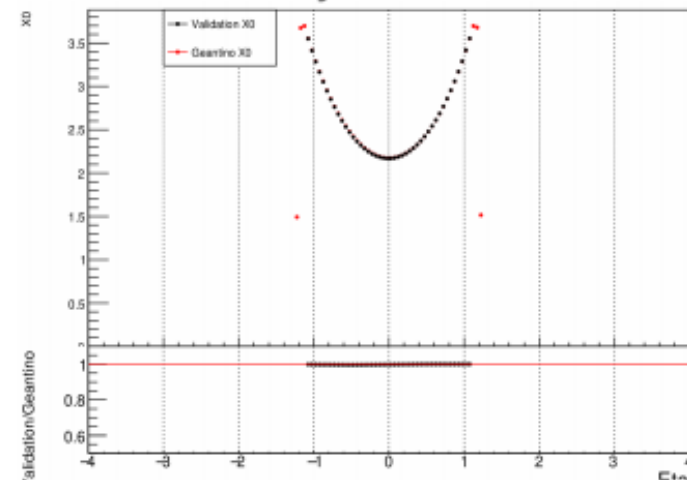
MaterialMapping

- Surface mapping
 - Map material onto Binned surface
- Volume mapping:
 - 3D grid for the Volume - Calorimeter

X0 ratio Validation/Geantino vs η for ITk



X0 ratio Validation/Geantino vs η for a dummy Calorimeter



Visualization

- Implement in Core to visual obj, ply
- Handy for code developing
- Different surface shape, Track

