

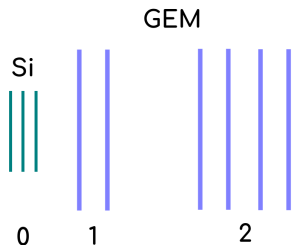
# Track Reconstruction Status

Sergei Merts

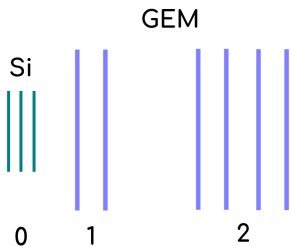
BERDS Meeting

08/04/2020



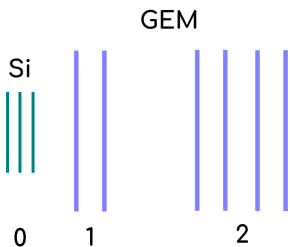


- Construct **4-hits** candidates and estimate their parameters in **zone 2**
- Propagate each candidate to hits in **zone 1** and **zone 0** by **KF**
- Connect **nearest** hit in **XY-gate** and update parameters by **KF**
- Select final tracks by  $N_{\text{hits}}$  and  $\chi^2$
- Mark hits of final tracks as **USED**

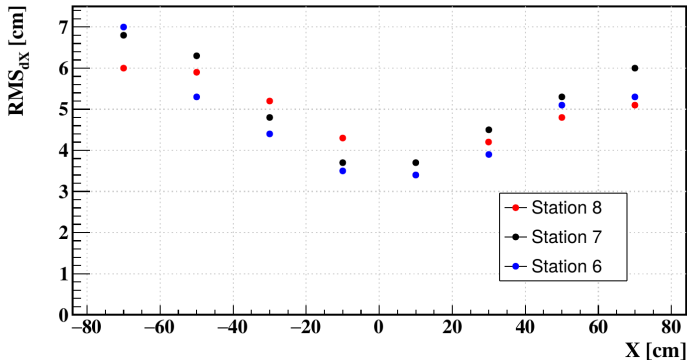
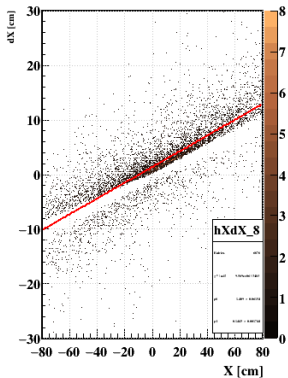


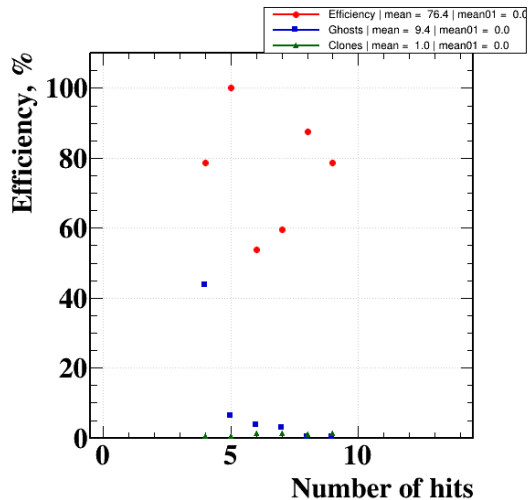
- Construct **3-hits** candidates and estimate their parameters in **zone 2** for **UNUSED** hits
- Propagate each candidate to hits in **zone 1** and **zone 0** by **KF**
- Connect **nearest** hit in **XY-gate** and update parameters by **KF**
- Select final tracks by  $N_{\text{hits}}$  and  $\chi^2$
- Mark hits of final tracks as **USED**

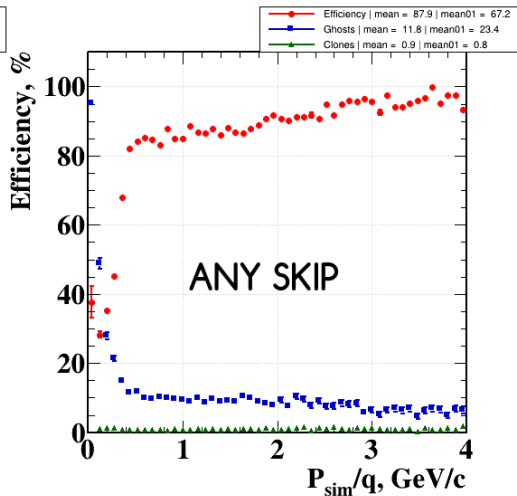
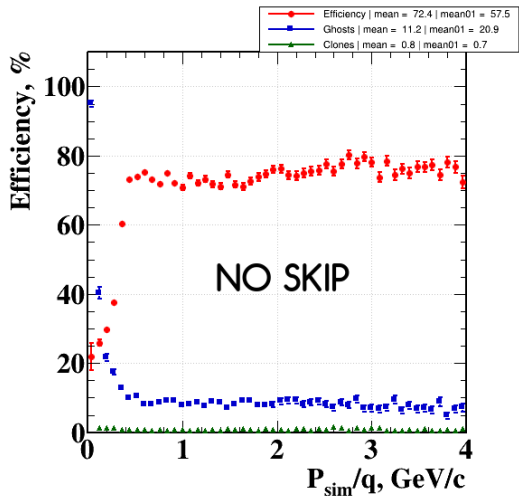
## 3. Low momentum tracks with inefficiency

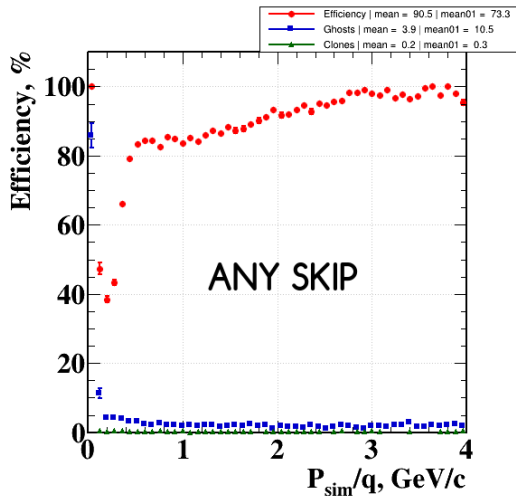
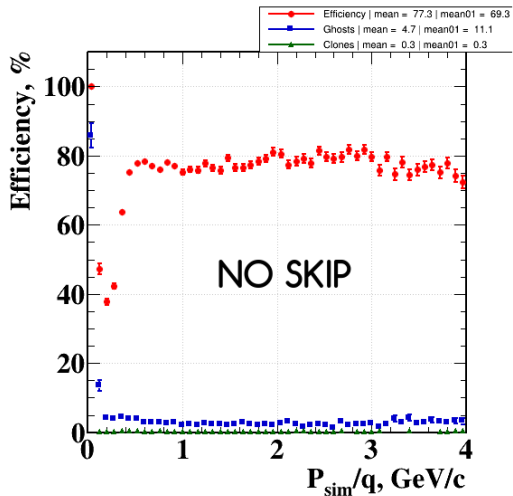


- Construct **2-hits** candidates in **zone 1** for **UNUSED** hits
- Propagate each candidate to hits in **zone 0** by **straight line** in ZY plane
- Connect **nearest** hit in **Y-gate** and estimate parameters of candidate
- Propagate each candidate to hits in **zone 0** by **KF**
- Connect **nearest** hit in **XY-gate** and update parameters by **KF**
- Select final tracks by  $N_{\text{hits}}$  and  $\chi^2$
- Mark hits of final tracks as **USED**



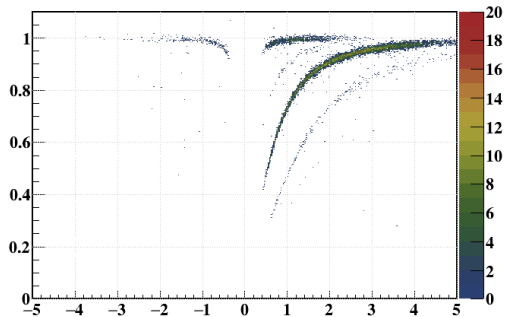




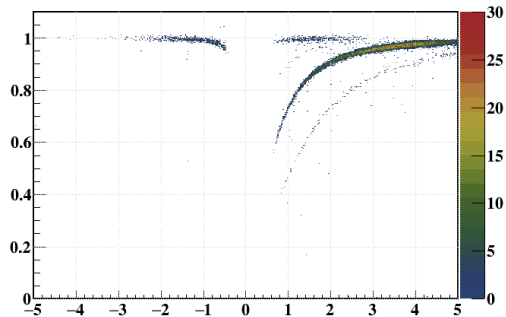




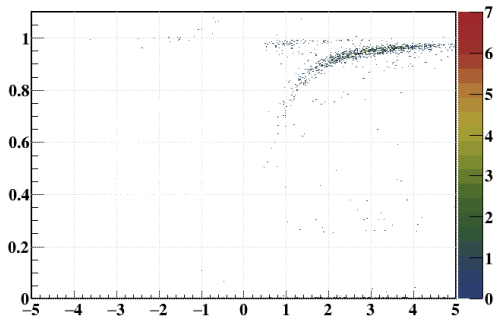
BmnGlobalTrack.fBeta400:BmnGlobalTrack.GetP()



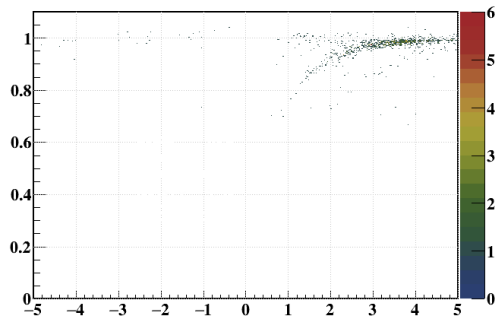
BmnGlobalTrack.fBeta700:BmnGlobalTrack.GetP()

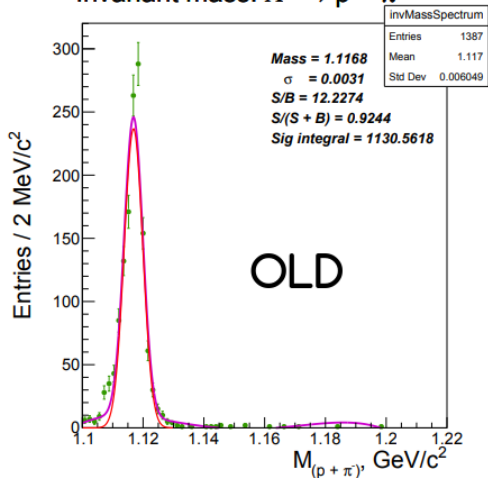
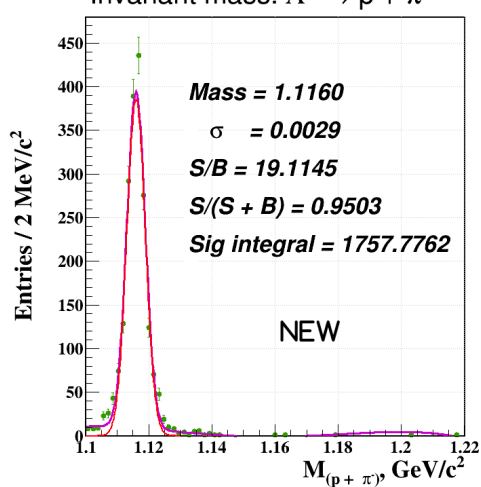


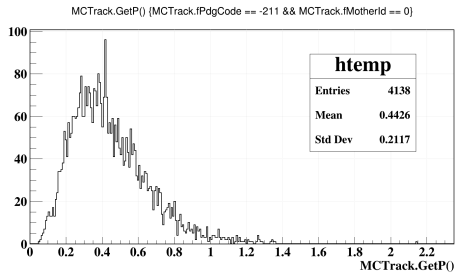
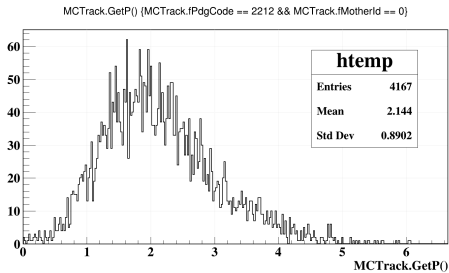
BmnGlobalTrack.fBeta400:BmnGlobalTrack.GetP()



BmnGlobalTrack.fBeta700:BmnGlobalTrack.GetP()



Invariant mass:  $\Lambda^0 \rightarrow p + \pi^-$ Invariant mass:  $\Lambda^0 \rightarrow p + \pi^-$ 



- **DEBUG** → **RELEASE**
- Tracking **parameters selection**
- **Before**
  - Monte Carlo  $\approx$  **1 sec/event**
  - Experimental  $\approx$  **6 sec/event**
  - One file (200 000 event)  $\approx$  **2 weeks**
- **After**
  - Monte Carlo  $\approx$  **0.3 sec/event**
  - Experimental  $\approx$  **0.7 sec/event**
  - One file (200 000 event)  $\approx$  **39 hours**
- **Details of Time Consumption**
  - Si+GEM Track Finder:  $\approx$  **45%**
  - Global Matching:  $\approx$  **21%**
  - Vertex Finder:  $\approx$  **19%**