

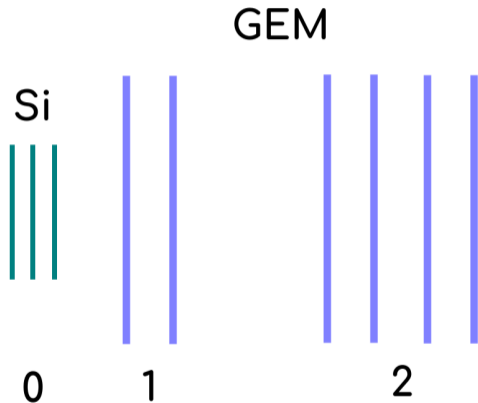
Track Reconstruction Status

Sergei Merts

BERDS Meeting

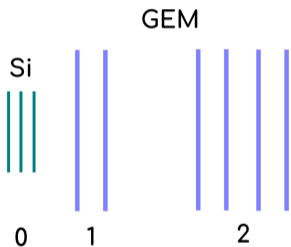
01/04/2020



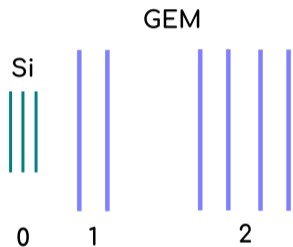


Problems with old tracking:

- Very noisy silicon planes
- Big gap between 4 and 5 stations

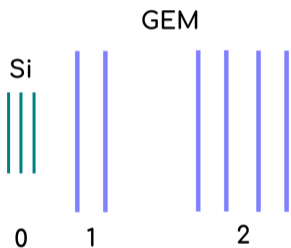


- Construct **4-hits** candidates and estimate their parameters in **zone 2**
- Propagate each candidate to hits in **zone 1** and **zone 0** by **KF**
- Connect **nearest** hit in **XY-gate** and update parameters by **KF**
- Select final tracks by N_{hits} and χ^2
- Mark hits of final tracks as **USED**

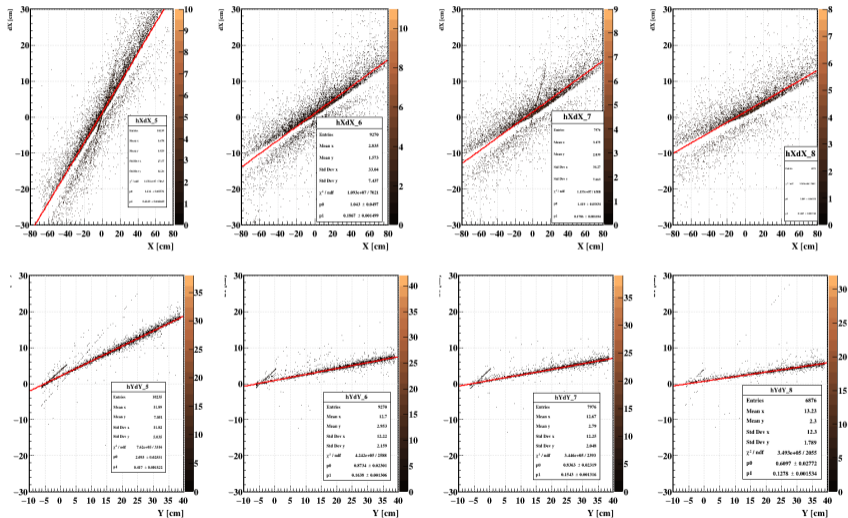


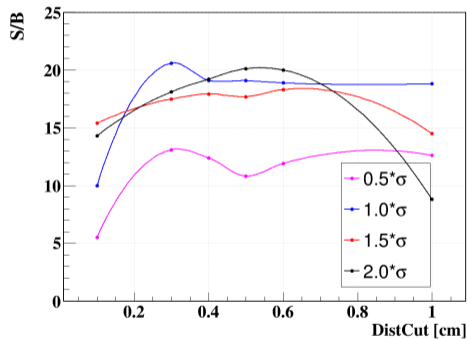
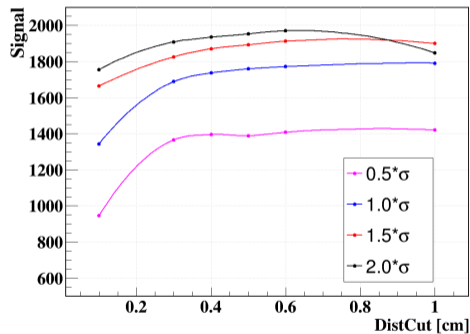
- Construct **3-hits** candidates and estimate their parameters in **zone 2** for **UNUSED** hits
- Propagate each candidate to hits in **zone 1** and **zone 0** by **KF**
- Connect **nearest** hit in **XY-gate** and update parameters by **KF**
- Select final tracks by N_{hits} and χ^2
- Mark hits of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

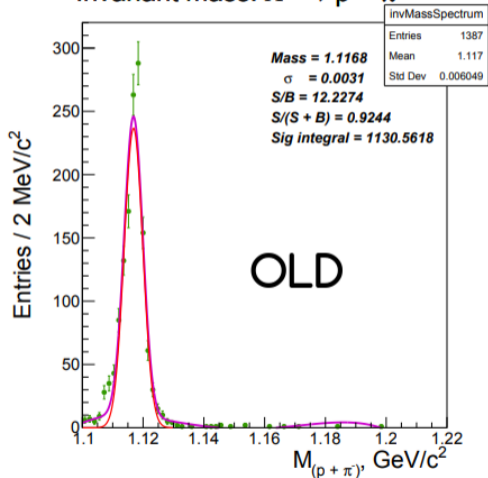
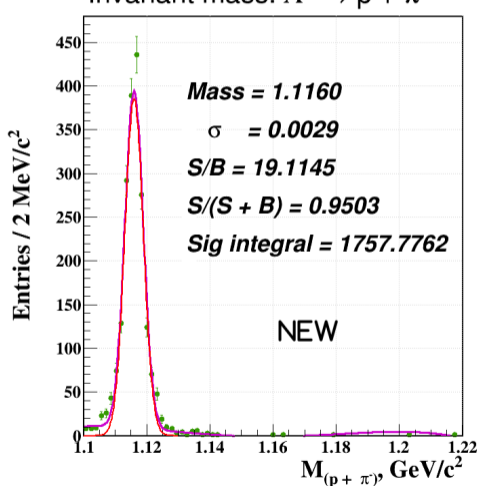
3. Low momentum tracks with inefficiency

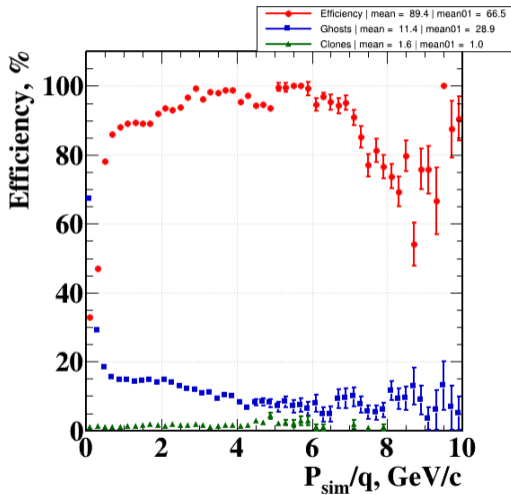
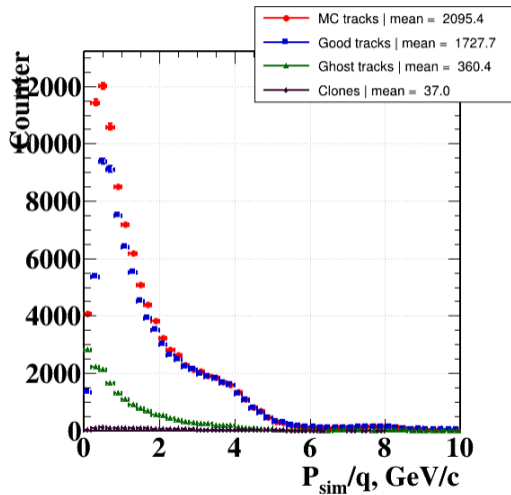


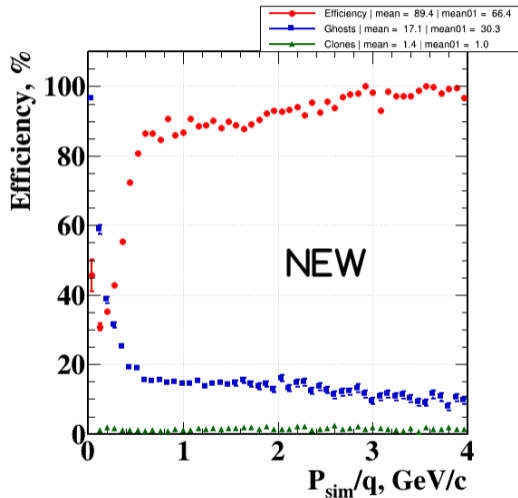
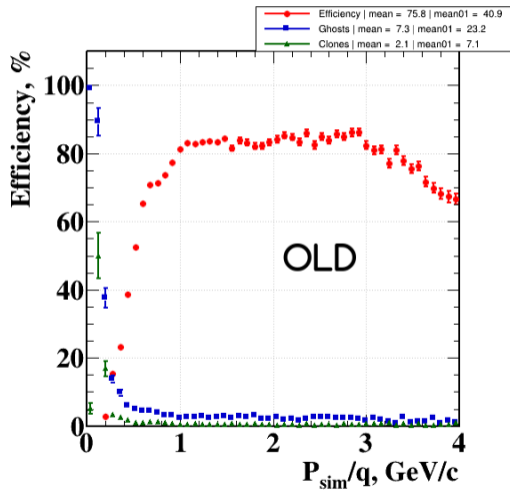
- Construct **2-hits** candidates in **zone 1** for **UNUSED** hits
- Propagate each candidate to hits in **zone 0** by **straight line** in ZY plane
- Connect **nearest** hit in **Y-gate** and estimate parameters of candidate
- Propagate each candidate to hits in **zone 0** by **KF**
- Connect **nearest**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

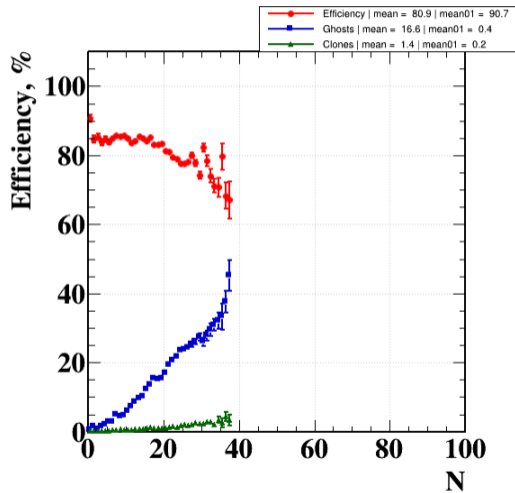


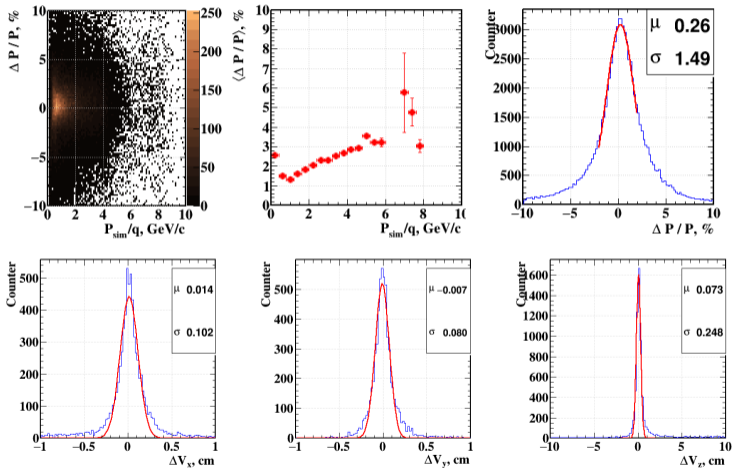


Invariant mass: $\Lambda^0 \rightarrow p + \pi^-$ Invariant mass: $\Lambda^0 \rightarrow p + \pi^-$ 









- Very slow
 - Monte Carlo ≈ 1 sec/event
 - Experimental ≈ 6 sec/event
 - One file (200 000 event) ≈ 2 weeks
 - One file on 1000 cores ≈ 20 min
- Too many fake tracks
 - Use **different distCuts** for different stations
 - Use cuts for **hits position**
- Specific cases
 - For **stage 3** propagate tracks to **zone 2**
 - For **stage 3** go to **station 0** by line if no hits on stations 1 and 2