SciFi Tracking Studies for Mighty Tracker

Klaas Padeken, Hannah Schmitz

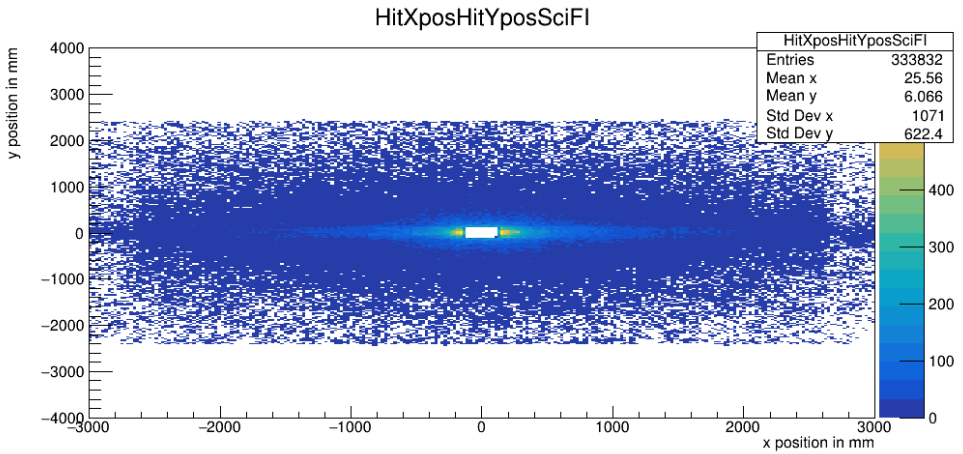
UNIVERSITÄT BONN

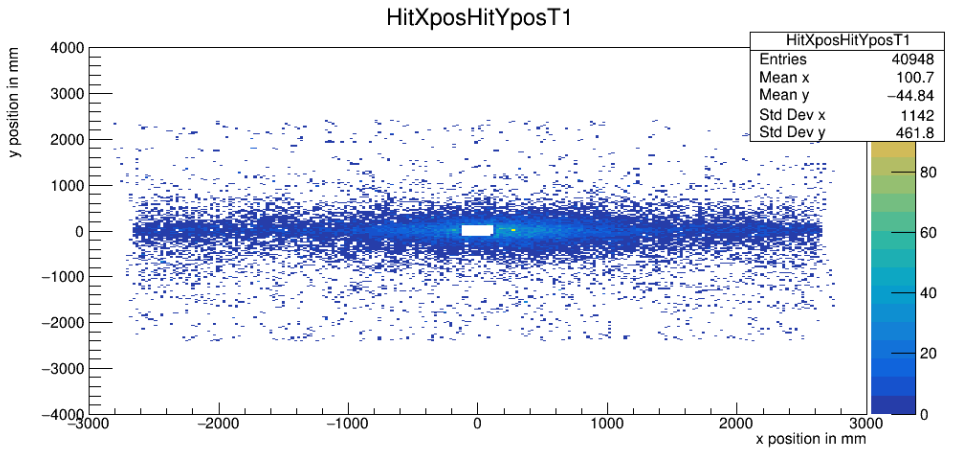
HISKP

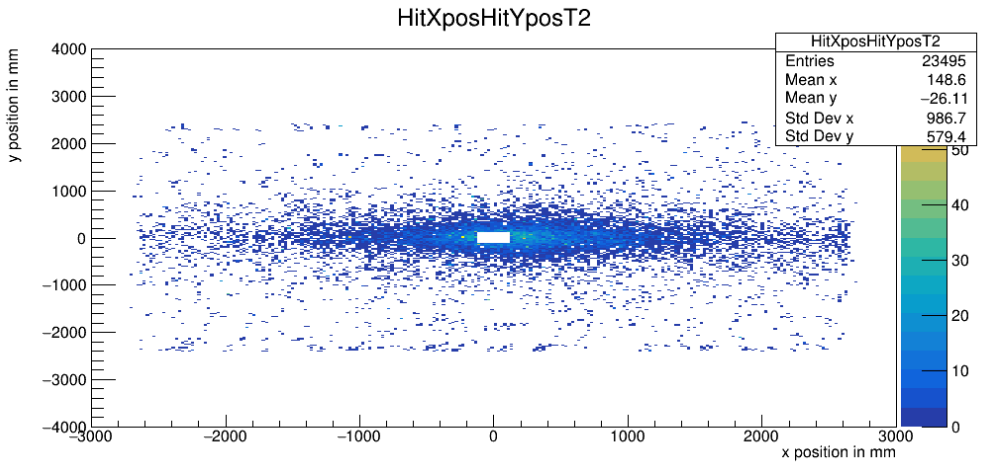
Initial Idea

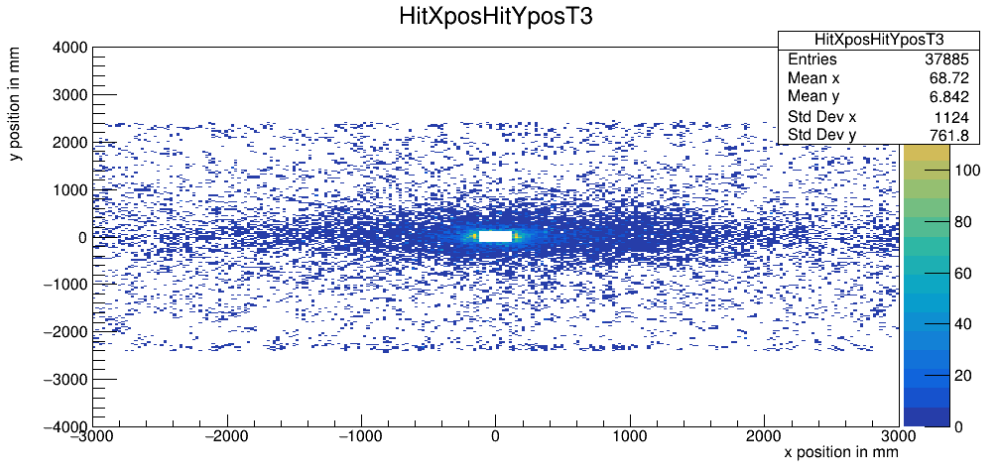
- Get familiar with the software
- Do some MC studies
  - Understand the software
  - Understand the hit topology in LHCb
- Do some Tracking studies with the current algorithm
  - Does it work?
  - How good is the tracking in the outer regions of the SciFi

MCParticle Level - Occupancy

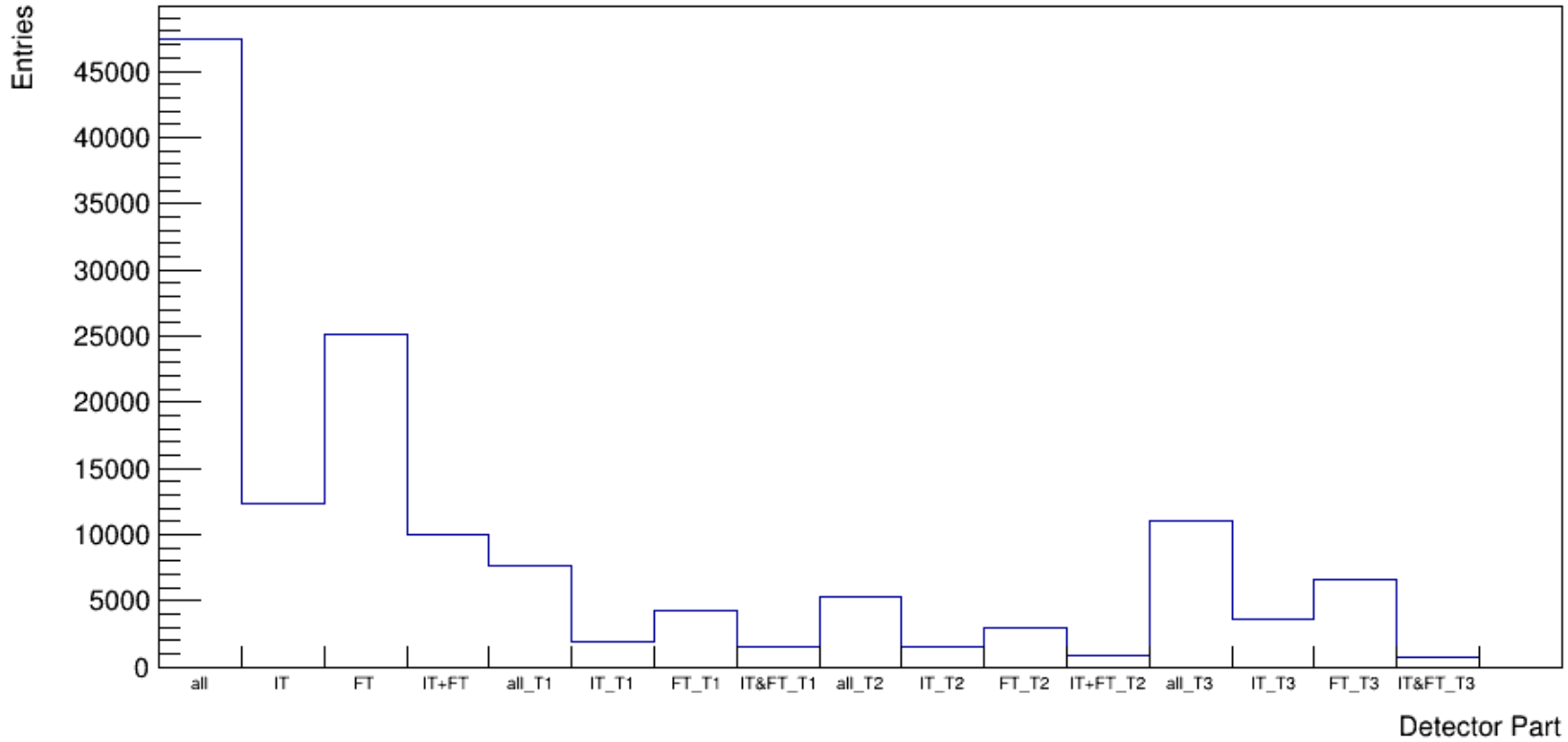






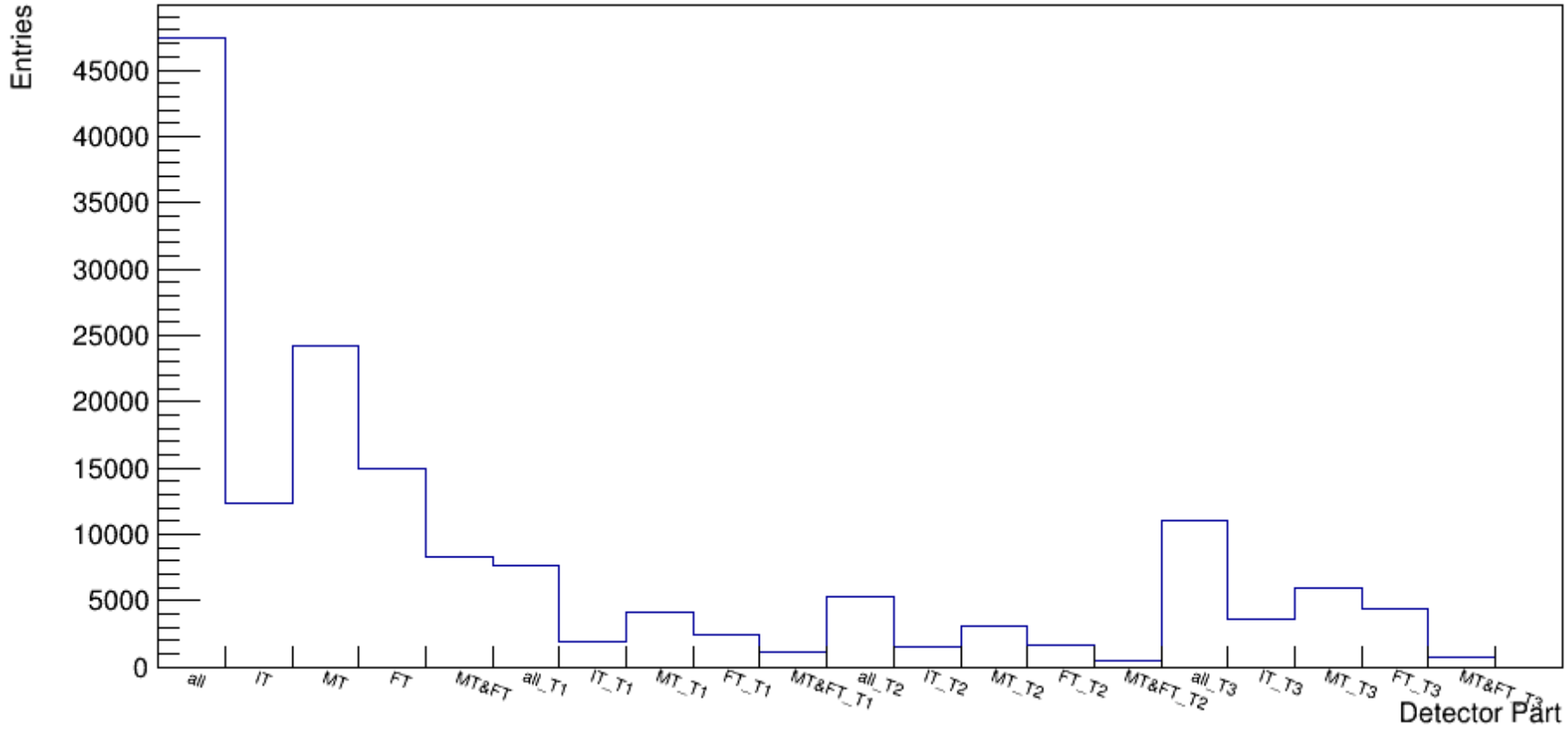


MCParticle Level – Sorted Upgrade 1B



- Most hits in FT
- More hits in T_3 than in T_1 and T_2

MCParticle Level – Sorted Upgrade 2

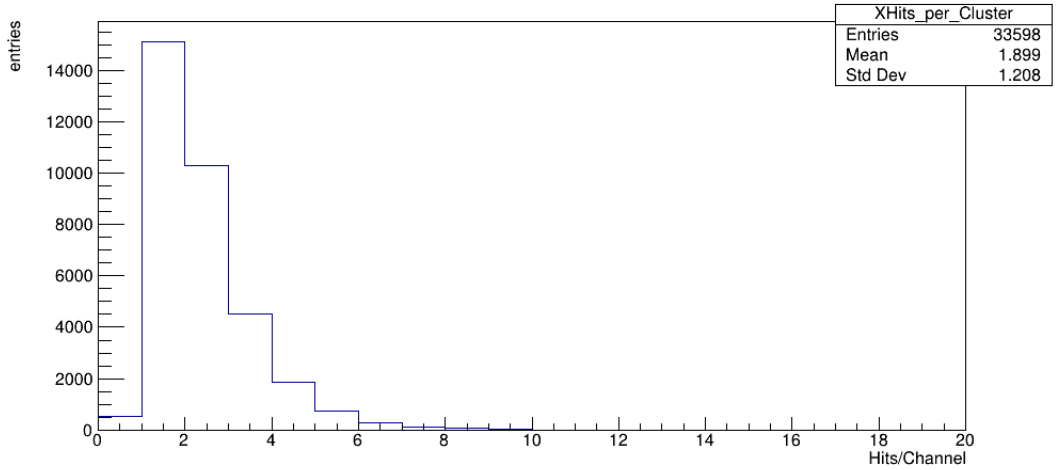


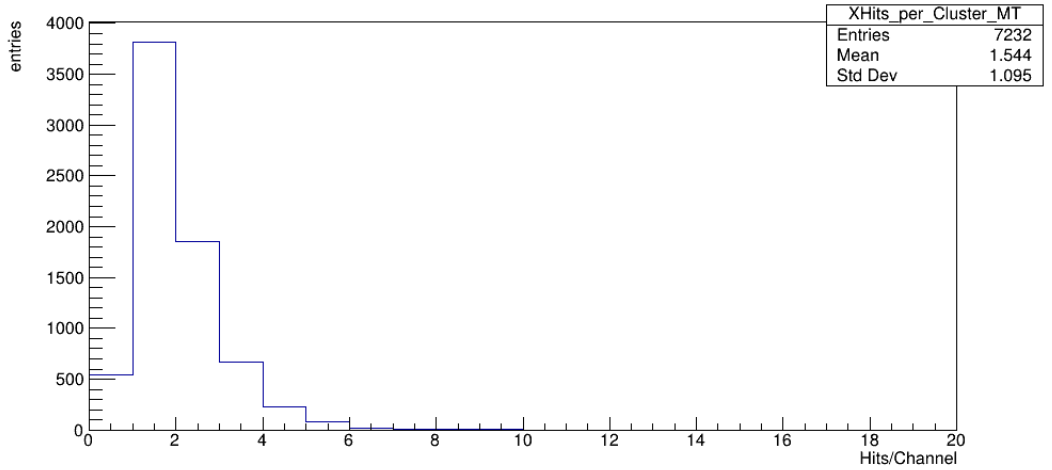
Same Simulation different detector split

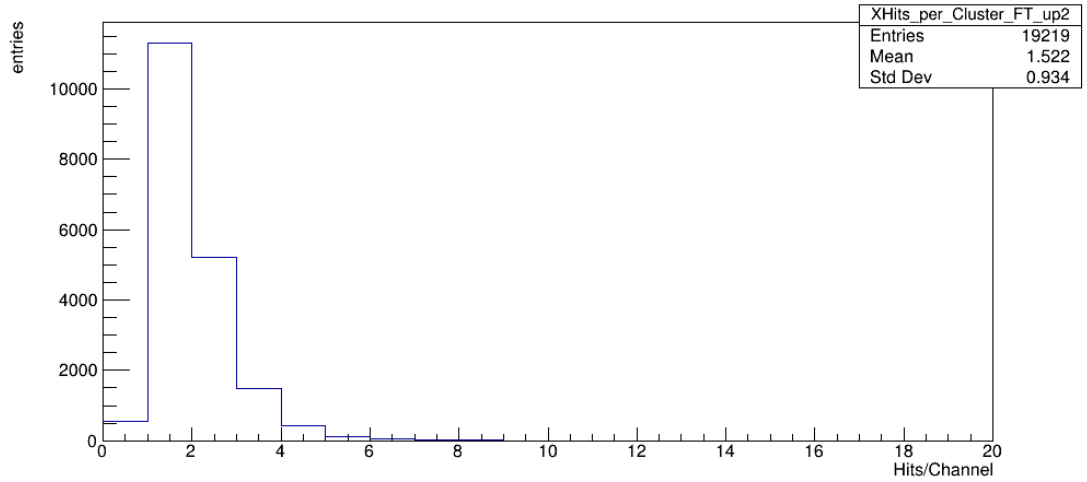
- Most hits in MT
- More hits in FT than in IT
- More hits in T_3 than in T_1 and T_2

From Discussion Yesterday:
Maybe T3 is Neutron background from ECAL

Hit Level - #Hits Per Channel







We could flexibly sort the Hits into the separate detector parts (one technical issue with the tree to be solved)

Tracking Studies

- Could get the current Tracking running for $L_{inst} = 1x10^{34}$ $cm^{-2}s^{-1}$
- But for $L_{inst} = 1.5x10^{34}$ $cm^{-2}s^{-1}$ it failed
- Got an updated version of the forward Tracking code from Peilian yesterday
  - This does work and we can do some studies now

Conclusion

- We started not 2 Month ago to get familiar with all the tools
- Made quite some process
- Have all the tools now
- Person Power:
  - Hanna Schmitz
  - Klaas Padeken
  - More students in the summer