How to estimate the sufficient number of the INTT layer

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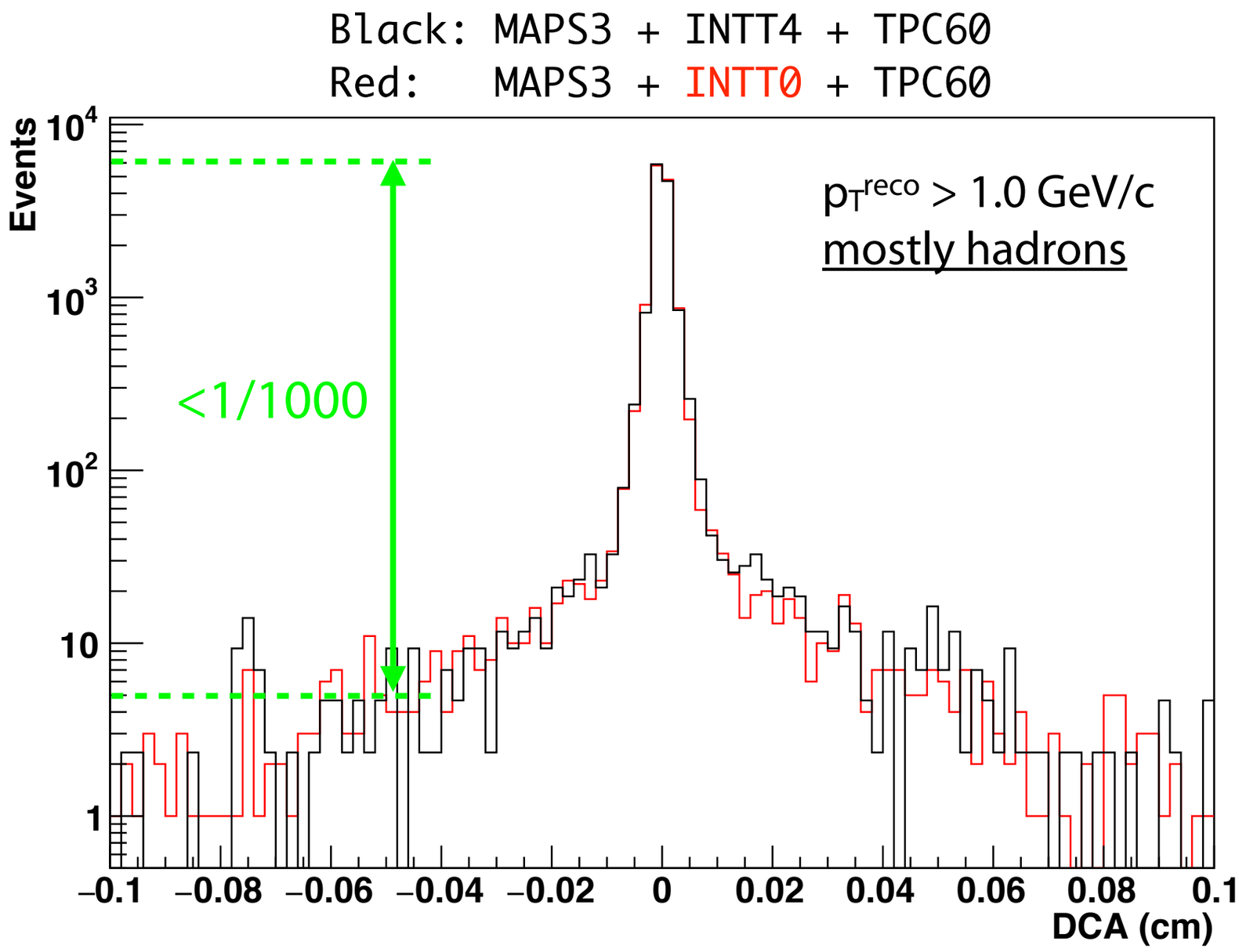
Homework

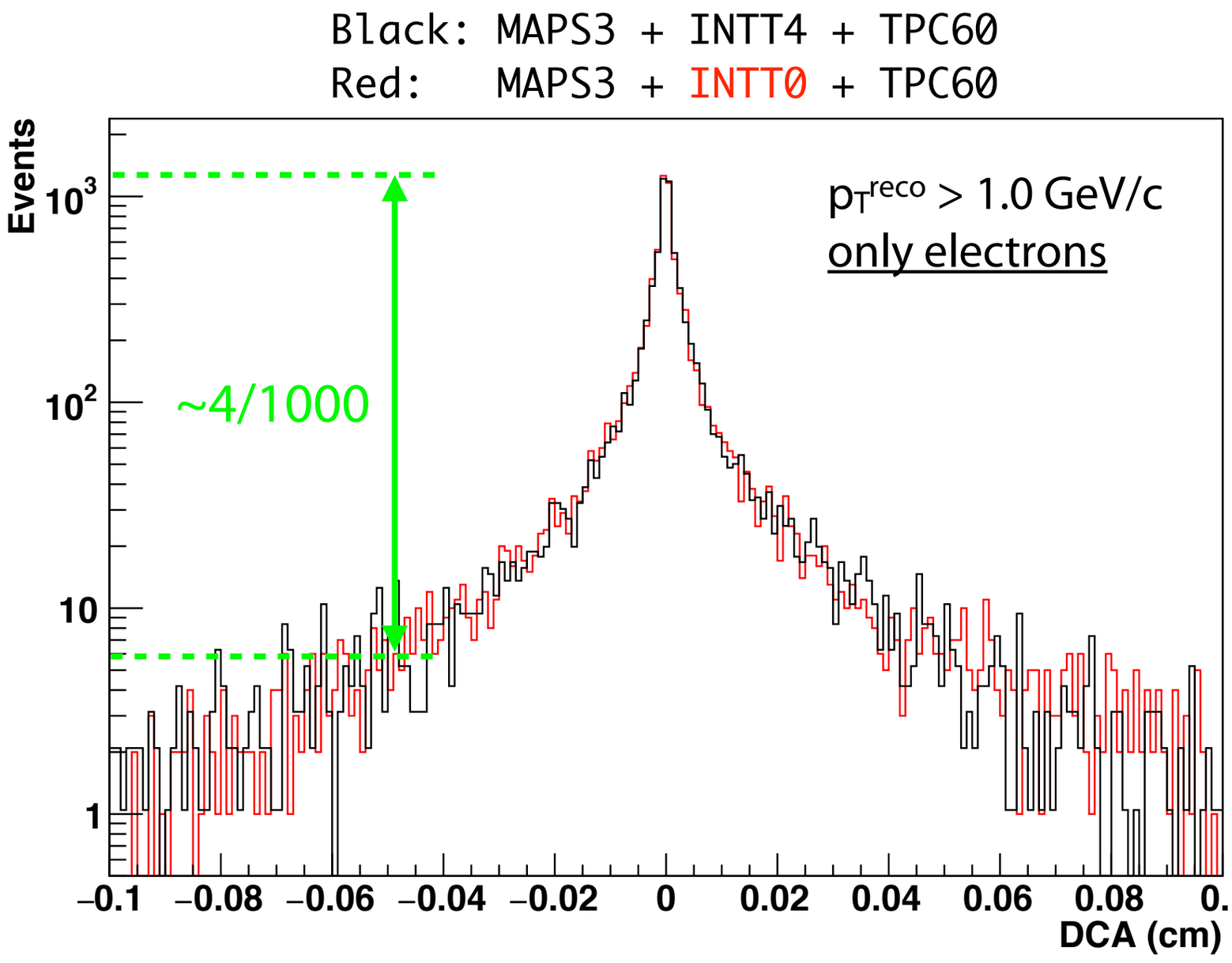
1. DCA distribution using central HIJING [done, but still poor stat.]
2. DCA distribution with the p_T cut > 1.0 GeV/c [done]
3. DCA distribution for only electrons [not yet for HIJING]

DCA distribution using central HIJING



- Good performance for central HIJING events
- No significant advantage by INTT4
- Tony is checking MAPS0/1/2 options.

DCA distribution using PYTHIA (pp→bb)



- Heavy hadrons are decayed into electrons at the PYHITA level.
- No significant advantage by INTT4

DCA distribution for only electrons

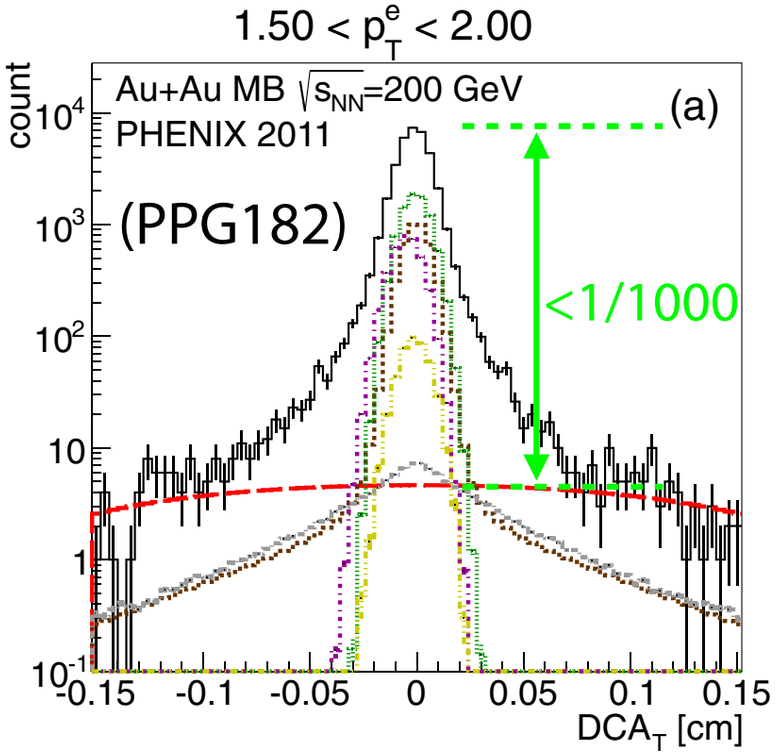
- HIJING

- All central HIJING events are generated and saved as HepMC files.
- Particles in HepMC are saved as “before decay”, so very few low-p_T electrons in HepMC.
- To associate electrons decayed in Geant4 to reconstructed tracks is technically complicated (maybe possible, but not tried yet).

Backup

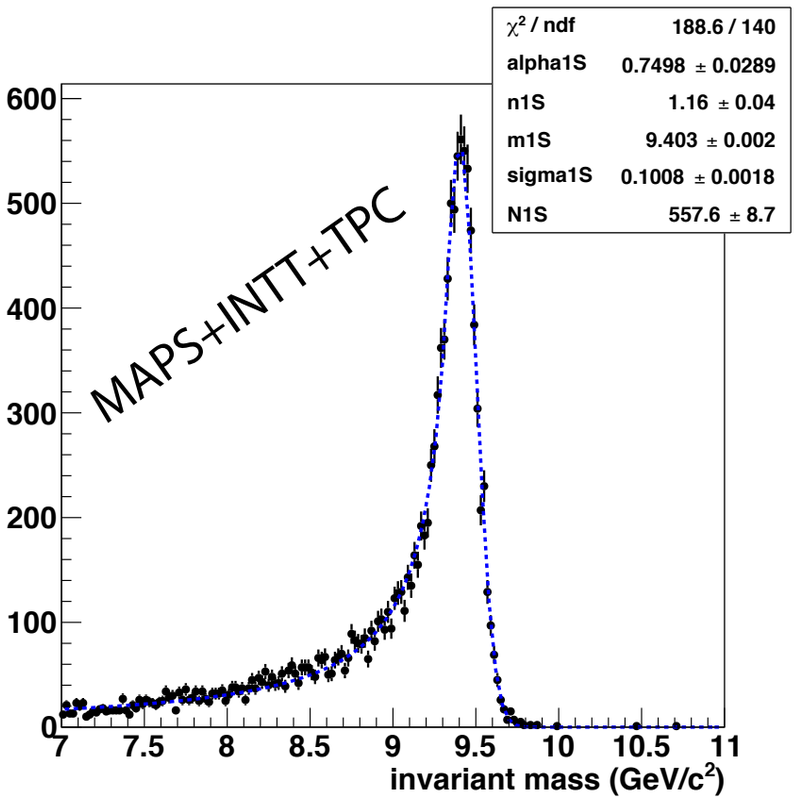
(from bi-weekly meeting on Apr. 14)

Procedure and time scale



1. **Determine the sufficient number of INTT layers** to achieve a smaller background level than 1/1000 of the peak at DCA = 0 cm.
   - We may add one or more layers for redundancy.
   - This task needs a correct track finding algorithm. We can use the track finding newly developed by Hawing et al. (see slides 4 and 5.)

2. Too many layers are meaningless and worsen momentum resolution. **Determine the maximum number of INTT layers** to keep $\sigma_\Upsilon < 100$ MeV.
   - This task needs a correct track fit algorithm. Track fit based on Genfit2 is ready for use.



April	May	June
Haiwang will set up track finding for ladder geom.	New track finding sometimes crashes for HIJING. Still under investigation (need a week).	
GM will remember how to use my sim codes.	Task 1 & Task 2 → Estimation of number of redundancy layers	Contingency