

Analysis Session Summary

CM33, Glasgow

V. Blackmore on behalf
of the Analysis Group

- Analysis status (A. Blondel)
- ~~Beam line optics (O. Hansen)~~
- Emittance paper analysis (V. Blackmore)
- TOF rate dependence (D. Rajaram)
- MAUS: MC and online analysis (C. Rogers)
- CKOV analysis (L. Cremaldi) → -moved
- Multiple scattering in Geant4 (T. Carlisle)
- Tracker analysis progress (E. Santos)

Agenda

Analysis status

Emittance paper analysis

TOF rate dependence

MAUS: MC and online analysis

Multiple scattering in Geant4

Tracker analysis progress

Analysis status (A. Blondel)

- Highlighted the range of work that's been presented at recent analysis meetings,
 - e.g. Maryian & Domizia's work on pion contamination in the beam line, Ole's work producing a symmetric beam, Maria revisiting G4beamline matching...
- Need to integrate all the detectors into the Analysis sessions.
 - Need to hear more from tracker/KL/EMR
- We need to prepare ourselves for Step IV physics
 - Reconstruction (inc. online), run plan, simulations, beam optics

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TOF rate dependence

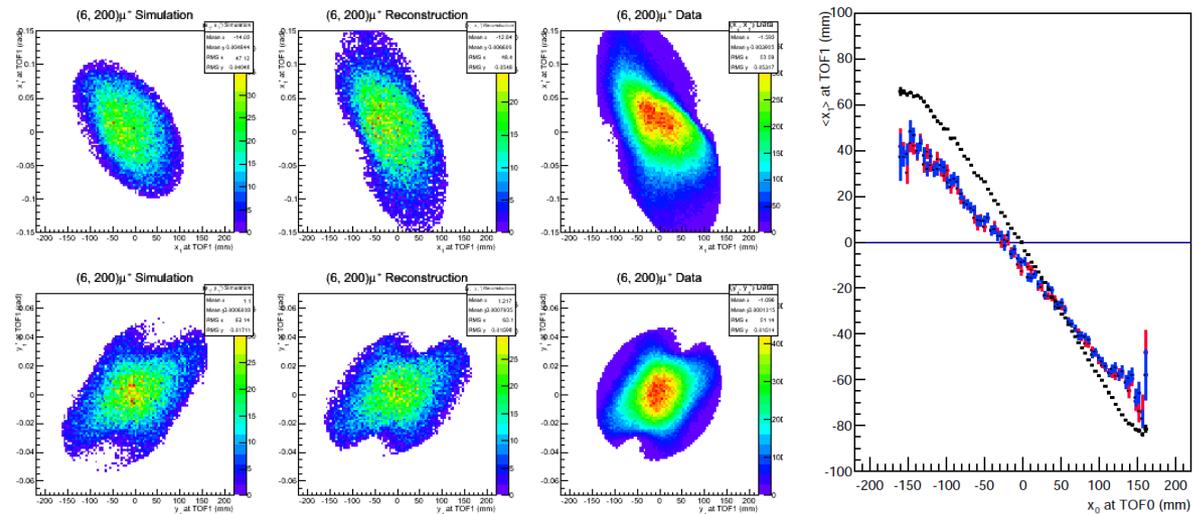
MAUS: MC and online analysis

Multiple scattering in Geant4

Tracker analysis progress

Emittance paper (V. Blackmore)

- Twiss parameters determined for data, simulation, and reconstructed simulation
 - Bug in the simulation?
- Recognise that analysis needs to be done swiftly, but accurately.



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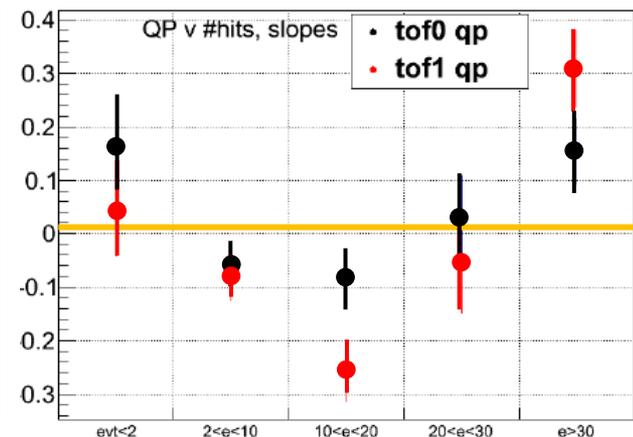
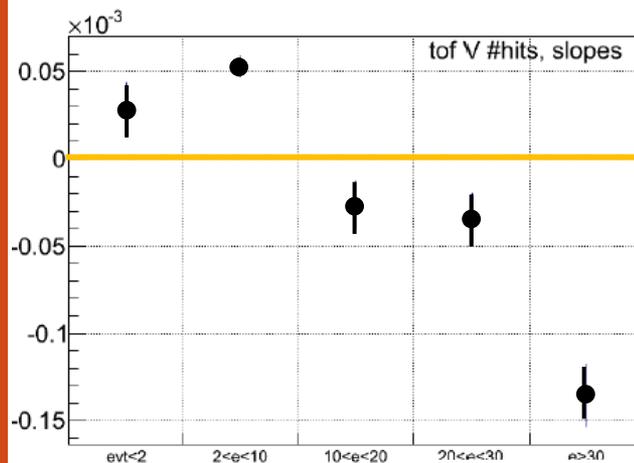
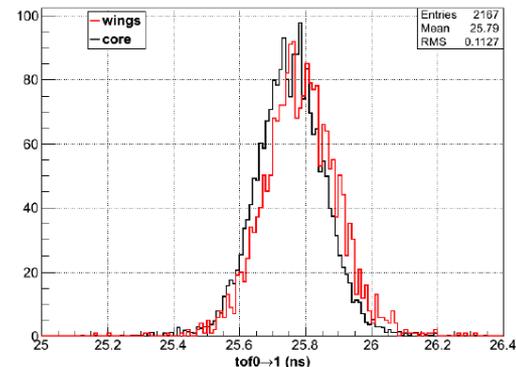
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TOF rate dependence (D. Rajaram)

- Time-of-flight depends on hit rate in detector.
 - Effect exists in interior and exterior regions
- Also considered where in the spill events occur, and dependence on PMT charge



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MAUS: MC and online analysis (C. Rogers)

- MAUS can now do anything normally expected of accelerator software
 - But: Geometries are old and need work, preferably a dedicated person
- Making online analysis work
 - Creating control-room plots of statistical quantities for runs: e.g. emittance vs. diffuser thickness
 - Presented two options, generated a lot of discussion
 - Reduced data set: $\{x, y, z | p_x, p_y, p_z | E, t, PID\}$
 - Per run: calc 1st & 2nd moments, emittance, Twiss params, beam envelope, dispersion...

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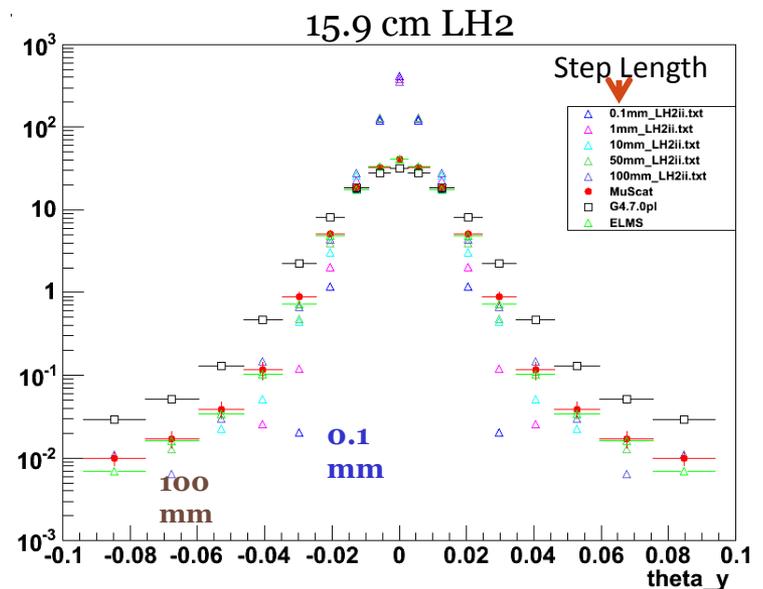
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Tracker analysis progress

Multiple scattering in Geant4 (T. Carlisle)

- There are many multiple scattering models:
 - G4MICE/MAUS uses Geant4, which uses Lewis Theory.
 - Recent Geant4 versions corrected step-length bug.
 - Tim still sees it, however.
 - Is the right version being called?



Tracker analysis progress (E. Santos)

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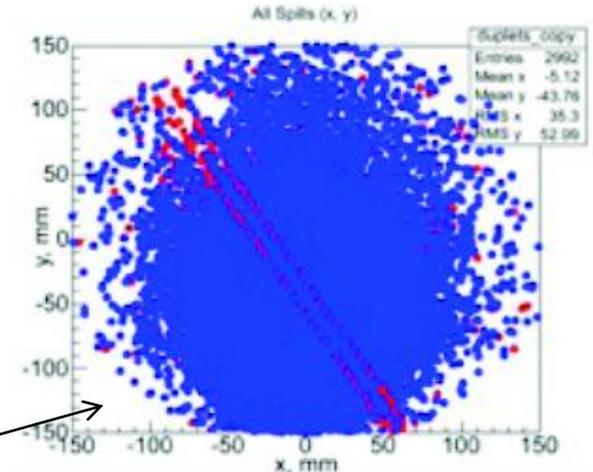
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Tracker analysis progress

- First SciFi spacepoints in MICE hall
- Track fitting with Kalman filters
 - Tracker group has produced its own routine
- TOF + single station tracker fit in progress
 - Propagating particles through quads
 - Some duplication of effort...
- We live in interesting times!



Screenshots of screenshots make for blurry plots. Boo.