



MAUS Status

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Overview

- Current Release
- Detector Overview
- Tracker Update
- Global Reconstruction Update
- Event Viewer
- Future plans
- Conclusion





Current Release

- Current release: MAUS-v2.5.0
- Highlights:
 - Tracker geometry bugs - all fixed
 - Tracker Kalman filter completed
 - Various other tracker updates
 - EMR - complete, more refinements added
 - Geometry - complete
 - Global reconstruction updates
 - Unpacker upgraded
 - CDB interface updated
 - Event Viewer in
- Known issues:
 - Global reconstruction bug (data storage issue)
 - Tracker efficiency dips at low momentum
 - MC speed still slow



Detector Overview

- CKOV - functional
- TOF - Done
 - Except for the trigger MC
- Tracker
 - See later slides
- KL - Done
- EMR - Done



Tracker

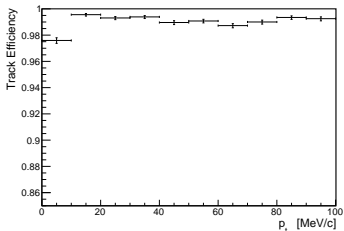
- Straight track pattern recognition now optimised using data
- Helical pattern recognition still to be optimised
 - Optimise cuts
 - Select best χ^2 fit result
 - New number of turns algorithm
- Geometry complete
- Kalman final fixes in - complete
- Low level MC needs validating
- Lots of performance and efficiency work done - paper nearly complete, latest draft at:
<https://github.com/mice-software/scifi-software-paper>
- Low momentum efficiency drop is last main concern



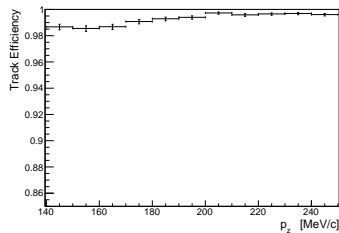
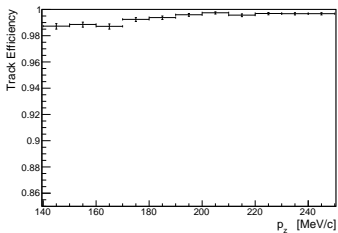
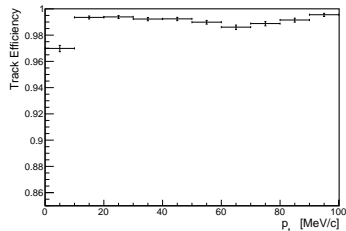


Tracker Performance: Track Finding Efficiency

TkUS



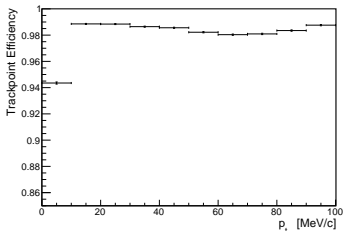
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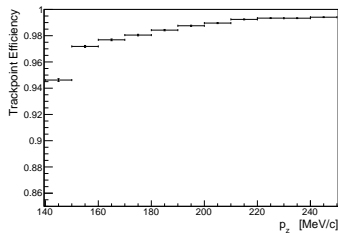
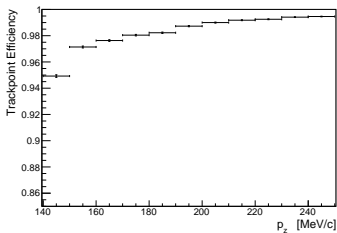
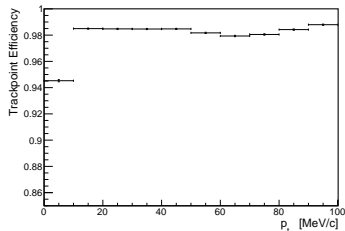


Tracker Performance: Space-point Association Efficiency

TkUS

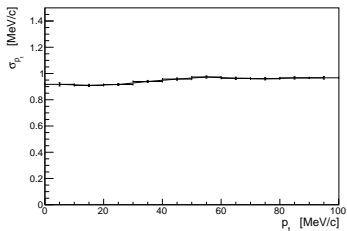


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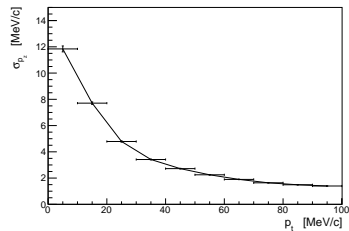
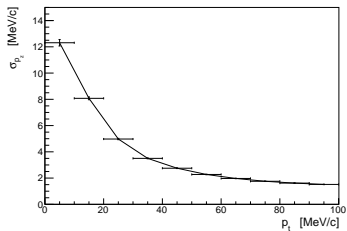
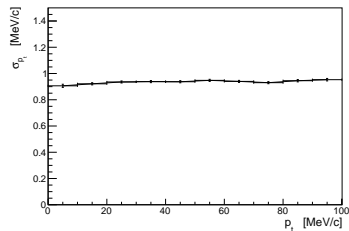


Tracker Performance: Momentum resolution

TkUS



TkDS



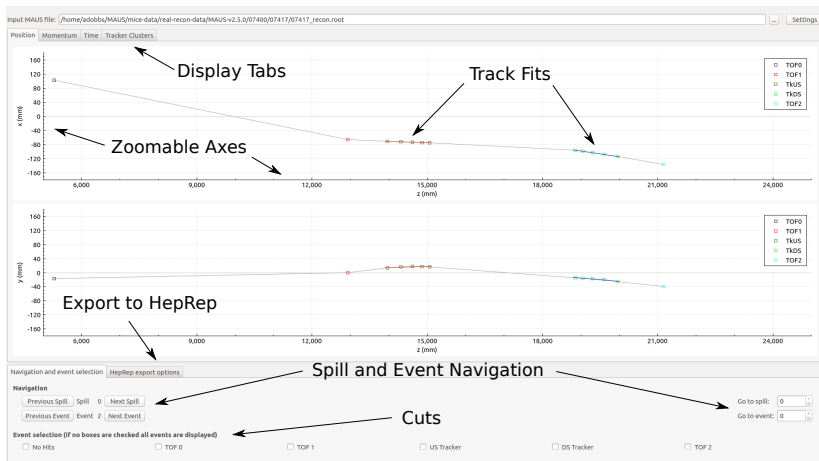
Global Reconstruction

- Global reconstruction code available in MAUS
- Development ongoing - not yet production quality, but close
- TrackMatching and PID working
- TrackFit under development
- Issues due to the way ROOT stores data (TRefArray) - working on it
- Big speed up improvements since last CM
- See J. Greis talk



Event Viewer

Located in `src/utilities/event-viewer` (see the MAUS workbook)



Future Plans

- Analyse tracker low momentum efficiency, fix if possible
- Verify low-level tracker MC
- Finish global reconstruction
- Event viewer into online reconstruction
- Speed up MC
- Simulate the trigger
- Complete the Output API
- Upgrade to ROOT6 (SL7 has it as standard)



Conclusion

- MAUS is providing reconstructed data, simulation and real, to collaborators for all the MICE detectors
- Many analyses now done using MAUS (see the other talks)
- MAUS is providing live online data reconstruction and visualisation for shifters
- Some development, optimisations and fixes remain, notably in the final stages of the tracker reconstruction and the global reconstruction
- Download: <http://heplnv152.pp.rl.ac.uk/maus/>

