Tracker Software Work Plan

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1 Configuration and Geometry

- Implement CDB interface for geometry and calibration - AD, CH, ES
- Ensure data in CDB is accurate - AD, CH, ES

2 Monte Carlo

- Sort out MC hit profile and understand `tlen` parameter - CH
- Create realistic MC trigger condition - CH
- Implement realistic beam - CH
- Generally create reliable MC that is straight forward to use - CH, PK
- Tests - CH
- Documenetation - CH

3 Real Data

- New unpacking classes to allow for error checking data
- Adapt tracker digitisation for new equipment

4 Pattern Recognition

4.1 General

- Consider / implement more thorough logic in looping algorithm as suggested at CM33 (best χ^2 fit of all trial tracks) - AD, SB, NH
- Structure improvements: divide helical and straight into seperate classes - AD, SB, NH
- Generally ensure code quality and reliability - AD, SB, NH

4.2 Straight track fit

- Ensure cuts are optimal - AD, ST
- Measure reconstruction efficiency and accuracy of track parameters using MC - ST, AD
- Documentation - AD
- Tests - AD

4.3 Helical track fit

- Implement full non-linear helical track fit either from scratch or using gsl (or both) - SB, NH, AD
- Ensure helical fit as a whole works reliably (including when straight tracks are present) - SB, NH
- Deal with singularities in helix parameterisation - KL, SB, NH, AD
- Ensure cuts are optimal - SB, NH
- Measure reconstruction efficiency and accuracy of track parameters using MC - SB, NH
- Create / modify reducer to allow visualisation of helical tracks - SB, NH
- Documentation - SB, NH
- Tests - SB, NH

5 Full track fit

- Finish implementation - ES
- Test against MC and cosmics - ES
- Test on tracks from TOF to single station - ES
- Coordinate with global reconstruction in MAUS - ES
- Tests - ES
- Documentation - ES

6 Residuals study

- Understand residual data - ST, AD
- Use to optimise road cuts and χ^2 cuts - ST, AD
- Compare residual in data and MC - ST, AD
- Investigate station / plane lateral and rotational misalignments and correct in software - ST, AD

7 Other software issues

- Ensure branch is kept in sync with MAUS trunk - ES
- Maintaining an installation on RAL PPD - AD
- Implementing SciFi data structure in MAUS to enable ROOT output - AD
- Documentation to main MAUS repo - AD