Current Status Of The SciFi Track Reconstruction

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Introduction

A (very) brief overview of the current status of the tracker software and reconstruction performance.

Now that data taking has ended I will outline the current state of affairs.

Current Status

- Track reconstruction is stable, well tested, and performing as expected,
- We have no existing major bugs or issues, [1]
- All investigations into the stability of the system have proved successful, with a couple still ongoing,
- If there are any pressing concerns please shout!

[1] Using *my* definition of "major".

Recent Additions

- TOF-Tracker Seeding Algorithm
  This was a push to allow low-pt tracks to be seeded by the TOF01 time in order to improve the track finding efficiency. It also allows some of the straight tracks to be re-fit as helices.
- A bug was found and fixed in the MC model - Thanks Durga!
  The the calibration lookup was finding the incorrect channels. Although the channels were modelled in the correct physical geometry, the calibration for each channel was wrong.
- The Big PatRec Fix
  A rapid bug fix and turn around in pattern recognition was required to improve the efficiency of the Minuit Algorithm. (The 50-MeV Bump)

TOF-Tracker Seeding

This is the newest toy in the track fitting tool box.
But its not designed for collaboration wide use.

- A special mapper designed for the 07469 dataset,
- Only works on the Upstream tracker, with no diffuser,
- Provides a small improvement to the track finding efficiency at low-pt,
- Repeats the Kalman fit based on p_z information from the TOF detectors.

Essentially acts as an alternative to global track fitting - but shouldn't be used as such.
It only works in specific circumstances,
and hasn't been tested well enough for all to use.

Outstanding Issues

Small things that are known about and well be addressed in time.

- There still exists an issue with low-radius tracks. They can very occaisionally be fitted with a high p_t value, typically with a high p_z - This is known degeneracy in the model.
- The noise model has not been fully validated. We would ideally have a comparison between MC noise and Data to demonstrate that the MC tracks are being found under identicle conditions. This is still on the to-do list.
- Tracker-Field alignment algorithm needs finishing up. Paolo may be able to offer some help there. It slipped down the to-do list due to the emittance measurement paper taking priority.

Questions?