

Status of the Tracker Reconstruction

C Hunt

MICE Analysis Workshop

24-01-2019

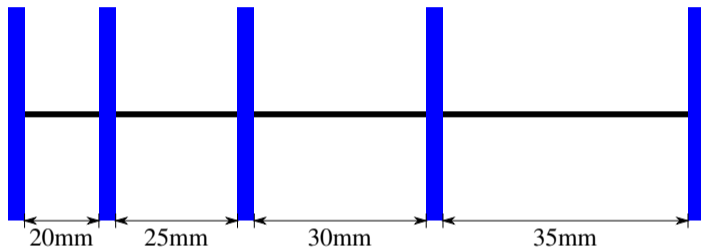


Introduction

- No major changes from last meeting,
- Chris R. noted low- p_t hole is a result of large chi-squared values for low radius tracks,
- Investigating this in detail to find a solution,
- Effort is currently to use the “smallest bounding circle” to correct for inaccuracies in the fitting algorithm.



The Trackers



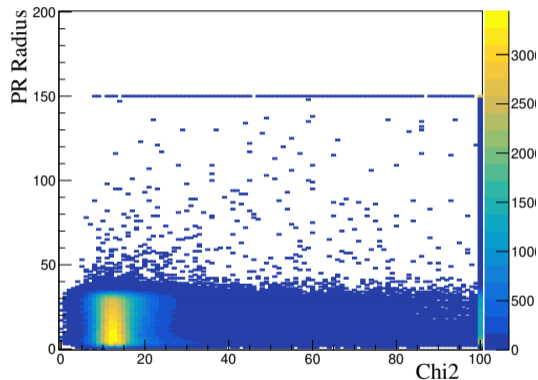
Irregular station spacing and fast muons ensures that the spacepoints are well distributed around the circumference of the track.

The bounding circle should be an excellent estimate for the helical trajectory.



The Cause of the Problem

- Excess of events at small bounding circle with very different radii,
- Excess of events at 150mm with varying radii,
- Assume the fit has returned the wrong value!



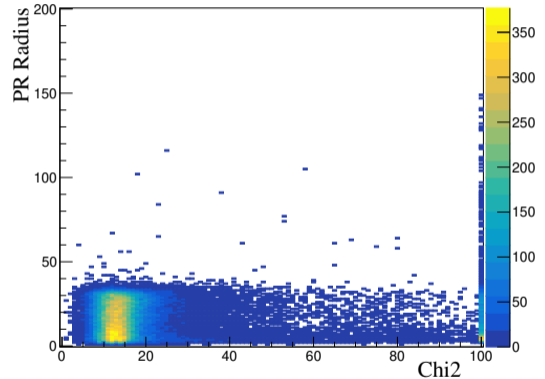
What I've Done

- Change the Pattern Recognition seeding algorithm to use the bounding circle,
- Rather than truncating very large radii to the plane radius, we could truncate it to the bounding radius,
- No major changes, just enough to fix what I could see, But that might not be the whole story.



Current Results

- Low-radii events cleaned up,
- High-radii events almost completely sorted,
- Still some additional tweaks required.



Conclusions

- Appear to have fixed some low-hanging fruit,
- Tested with Chris Rogers, appears to have not provided enough of a fix,
- Currently think that it might be the Kalman fit which is struggling, even though patten recognition is improved.
- Some good steps forward, some more thought required.

Stay tuned for when my lungs are in better condition!

