

Ideal Track Finder Issues

Spurious GEM Hits & Kalman Filter Effect

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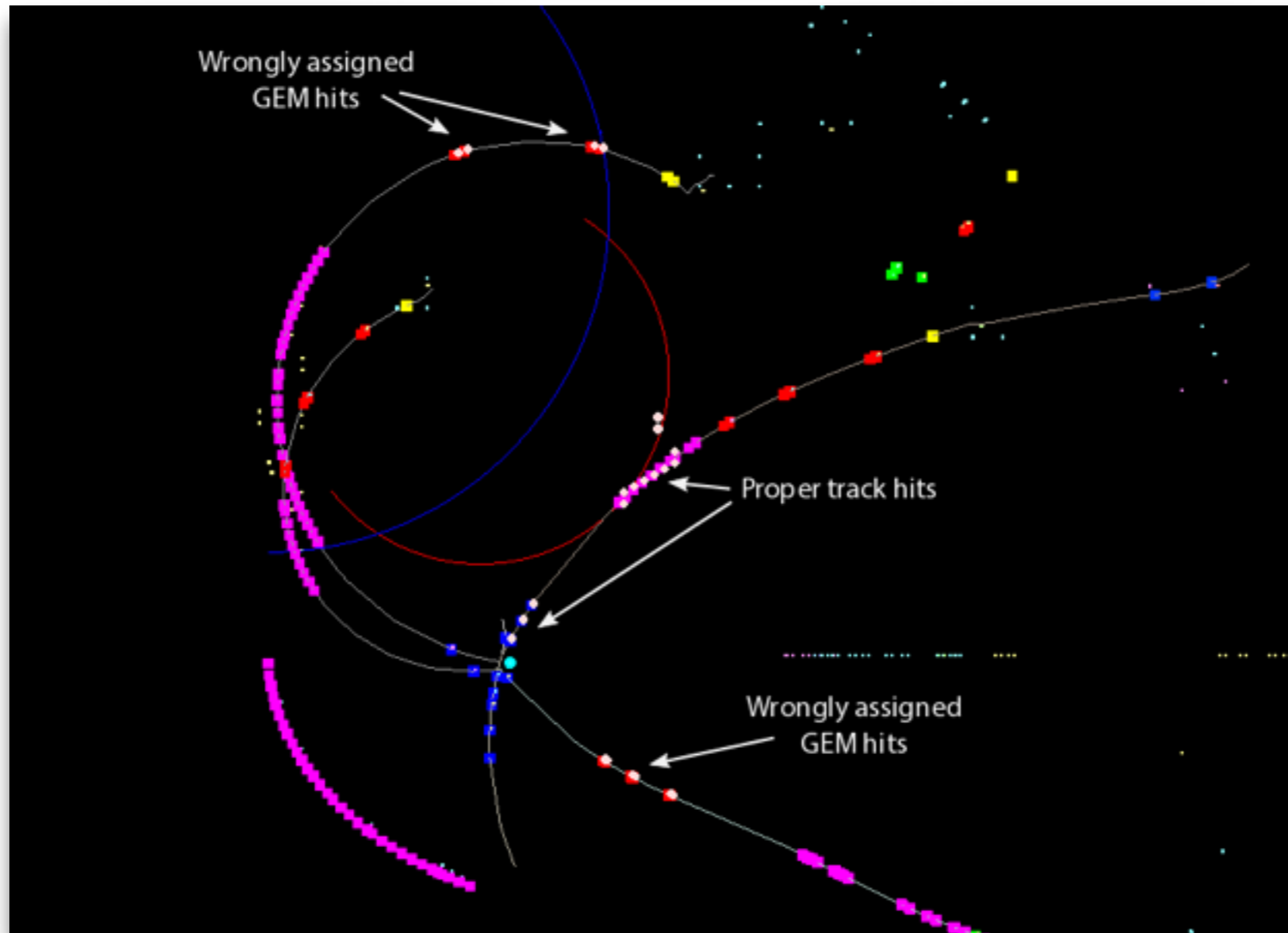
12 May 2015

Hyperon SeeVogh Meeting

Ideal Track Finder and GEM Hits

PndSttMvdGemTrackingIdeal

FairSoft: mar15
FairRoot: master (26.03.)
PandaRoot: trunk (r27581)



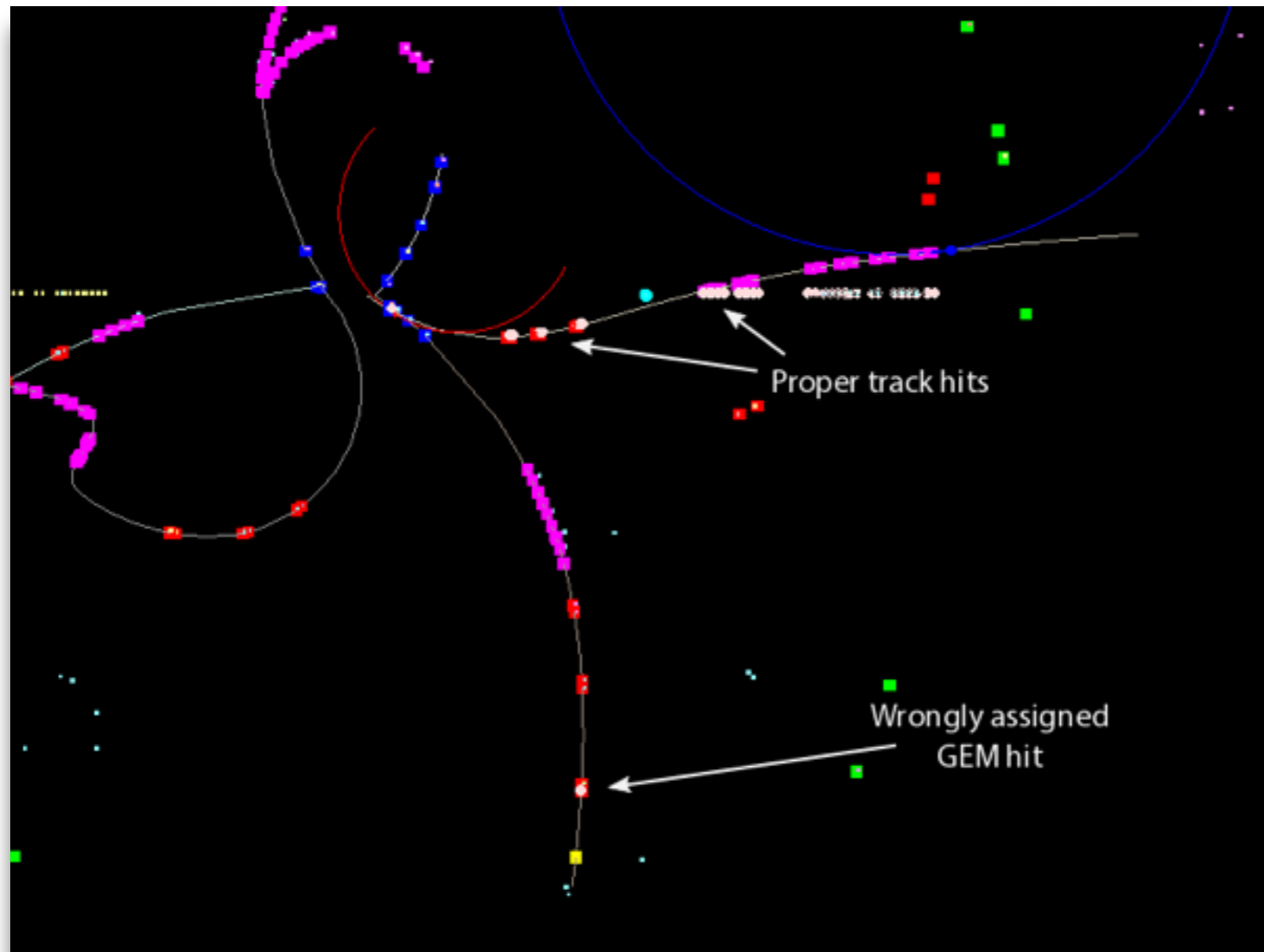
- only display track 0
- red: first track param
- blue: last track param
- white dots: MC points associated with track

- Ideal track finder assigns GEM hits wrongly sometimes
- Suspected reason: incompatibility with FairLinks

New Ideal Track Finder

PndMCIdealTrackFinderNewLinks

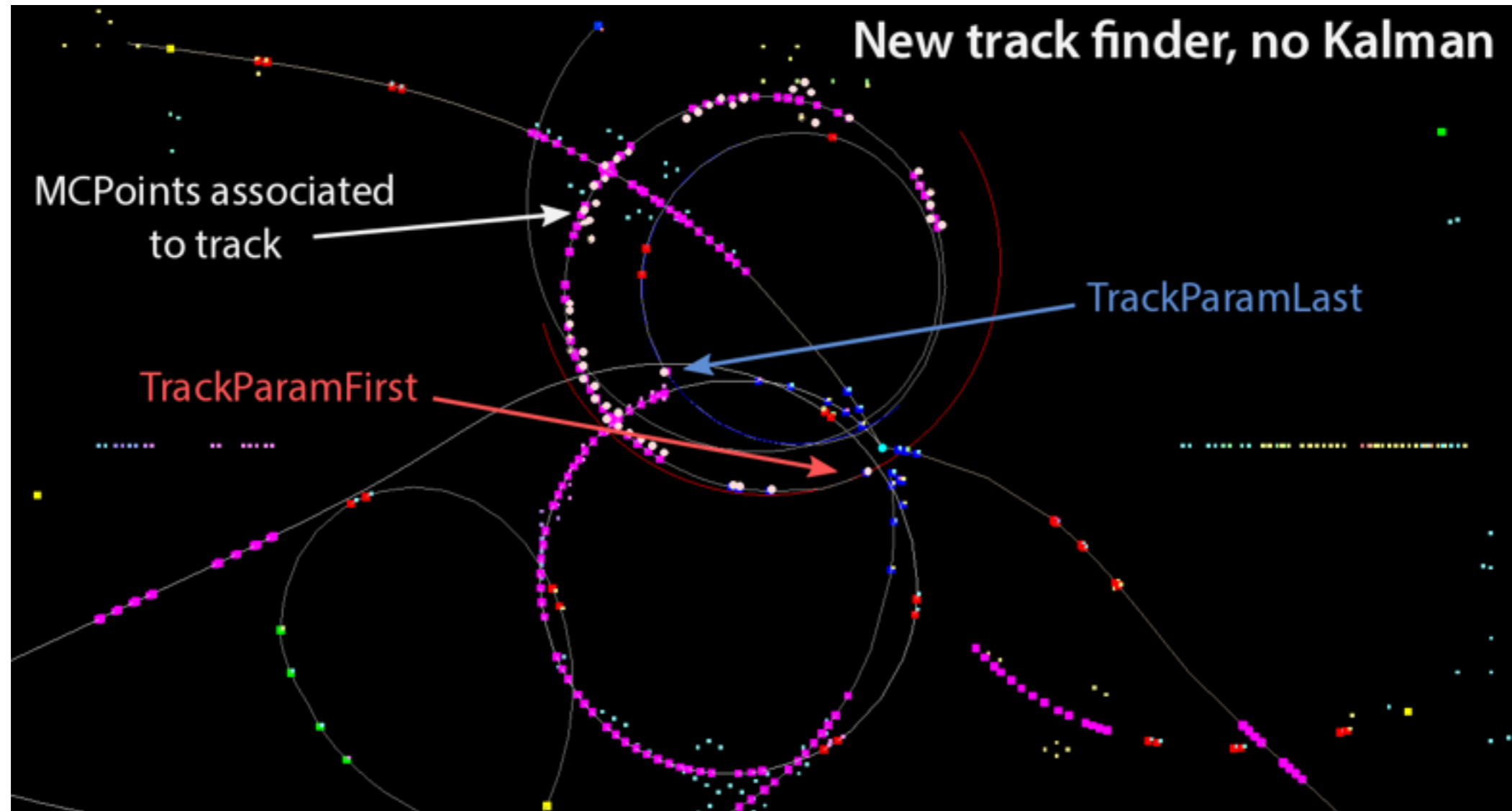
FairSoft: mar15
FairRoot: master (26.03.)
PandaRoot: trunk (r27581)



- only display track 0
- **red**: first track param
- **blue**: last track param
- white dots: MC points associated with track

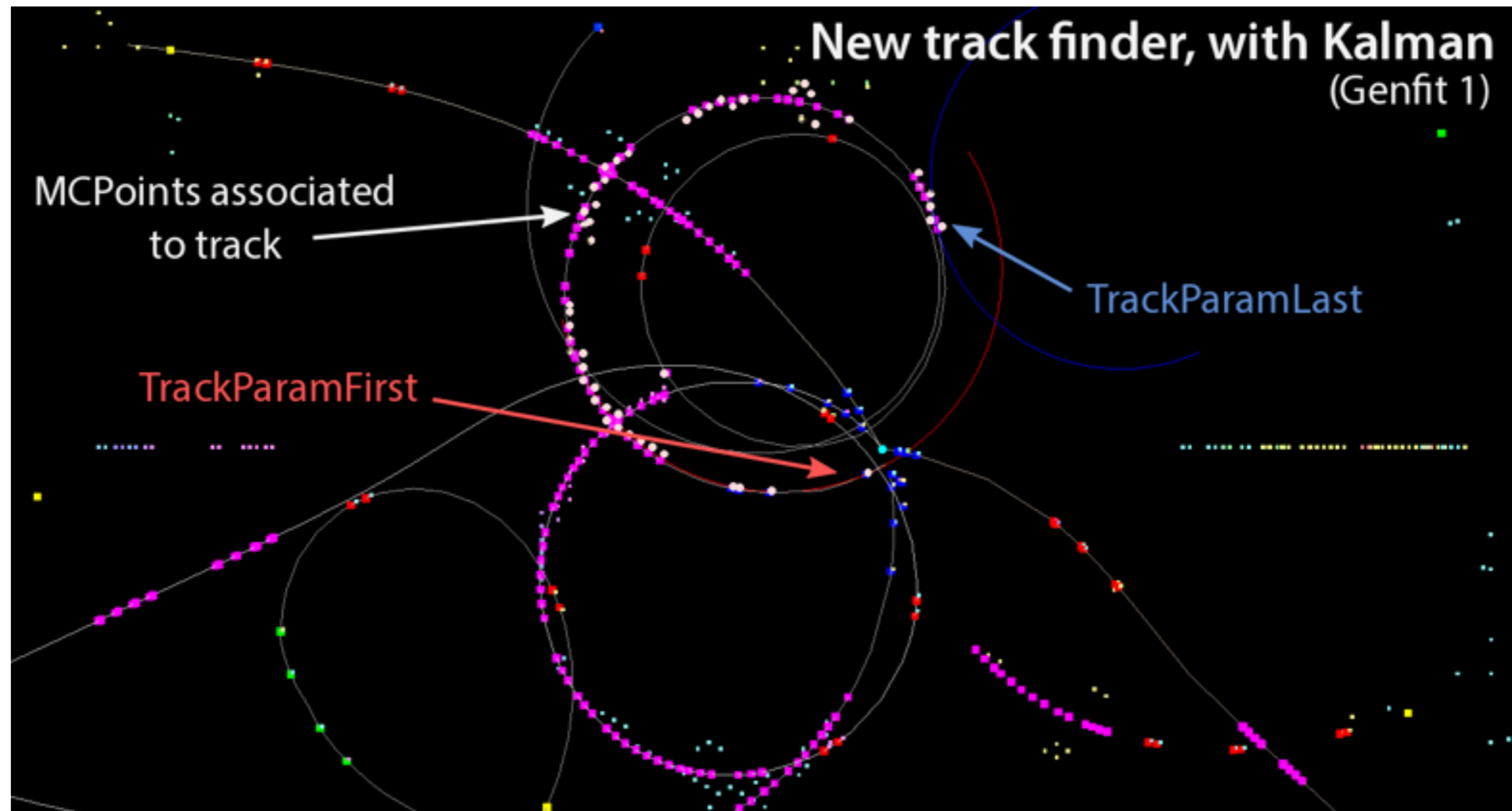
- Ratio of wrongly assigned GEM hits decreased
 - Still some left
 - Track parameters not correct

Effect of Kalman Filter



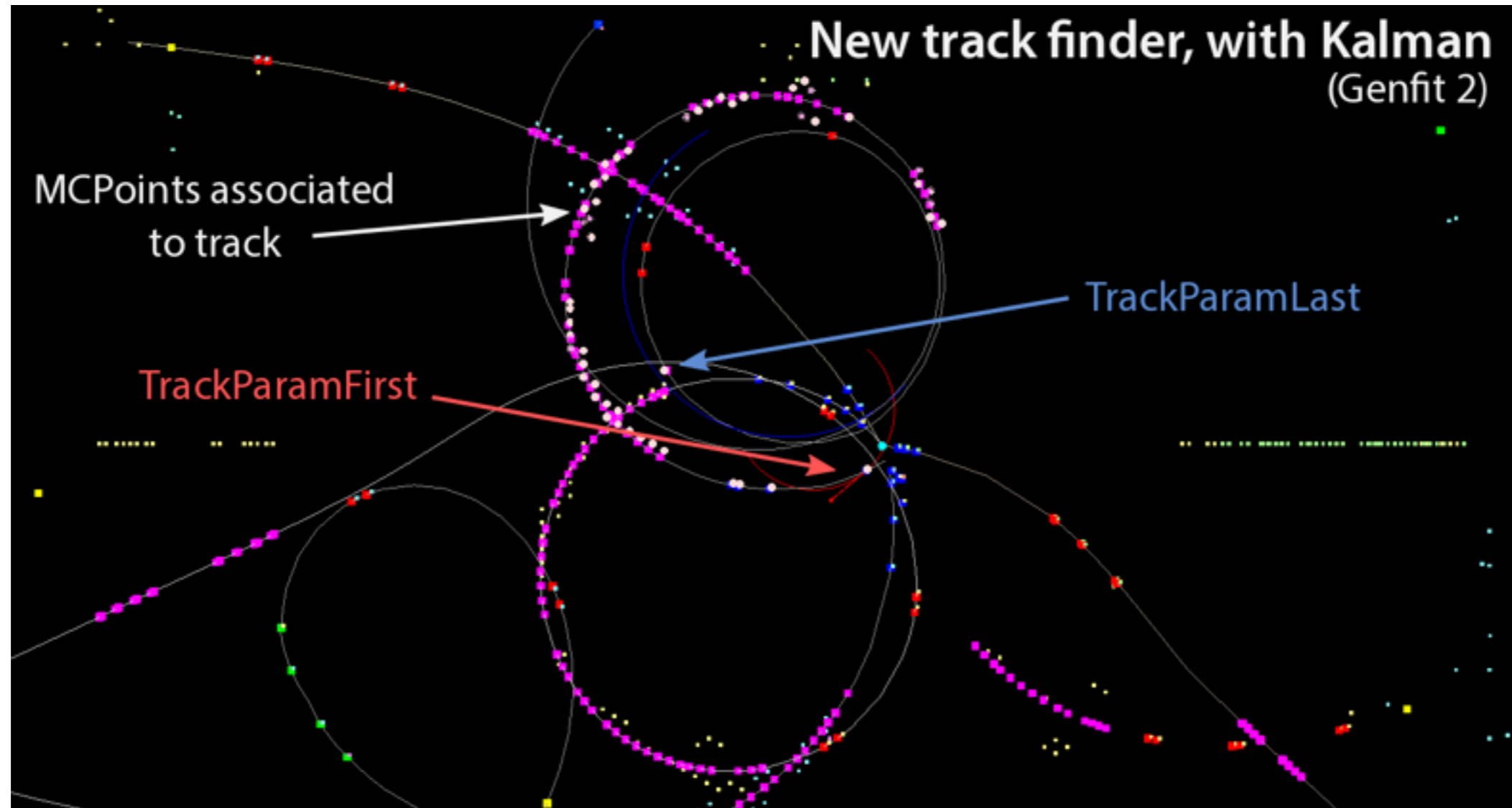
- Without Kalman filter, track parameter look legit

Effect of Kalman Filter



- With Kalman filter (Genfit 1):
 - **Track start** seems fine
 - **Track end** is messed up

Effect of Kalman Filter



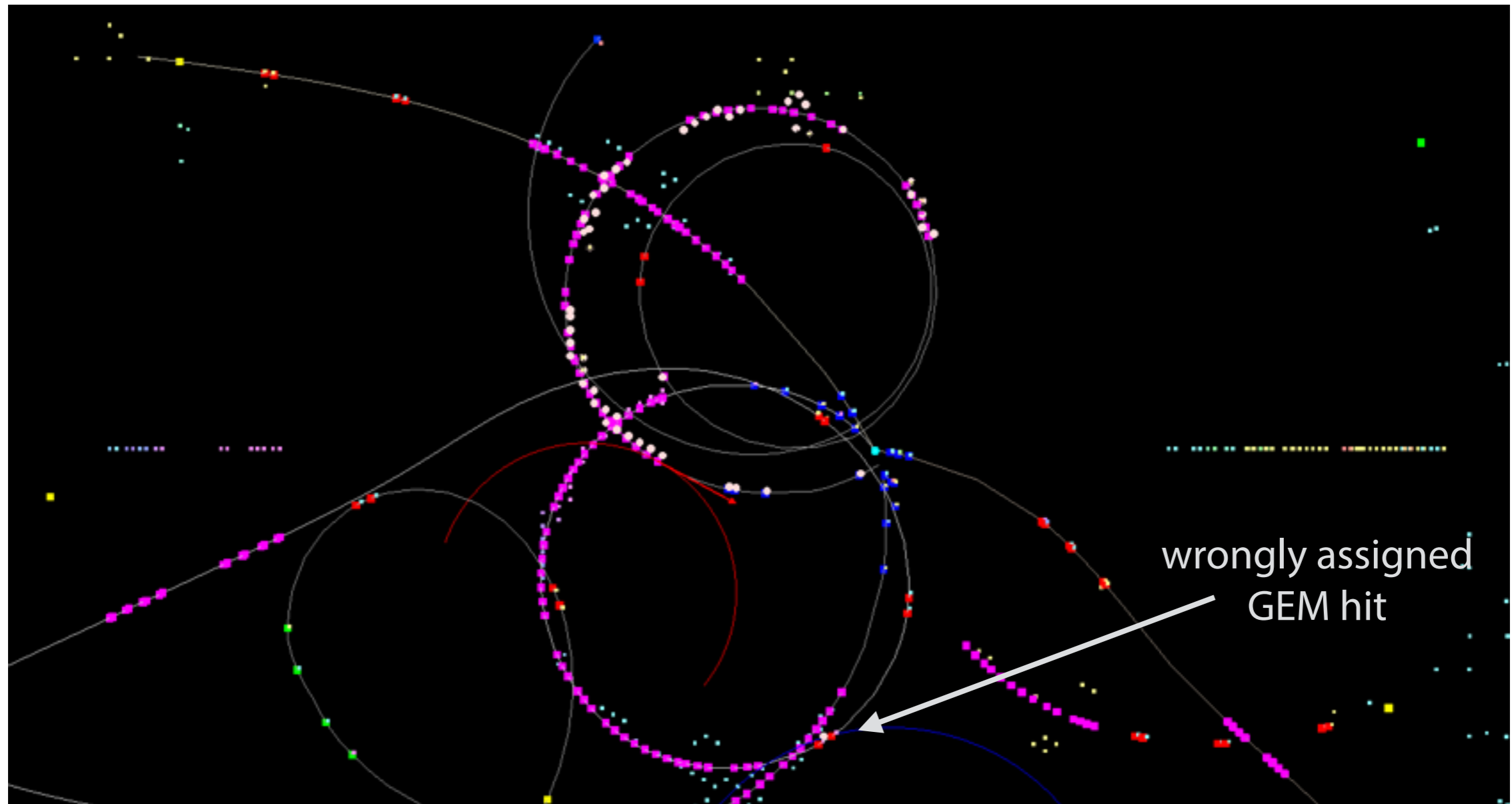
- With Kalman filter (Genfit 2):
 - **Track start** has too low momentum
 - **Track end** seems okayish

Conclusions

- GEM hit association has issues in both ideal track finders
 - Hits are assigned to the wrong track
- Kalman filter is required to run, but makes tracks worse

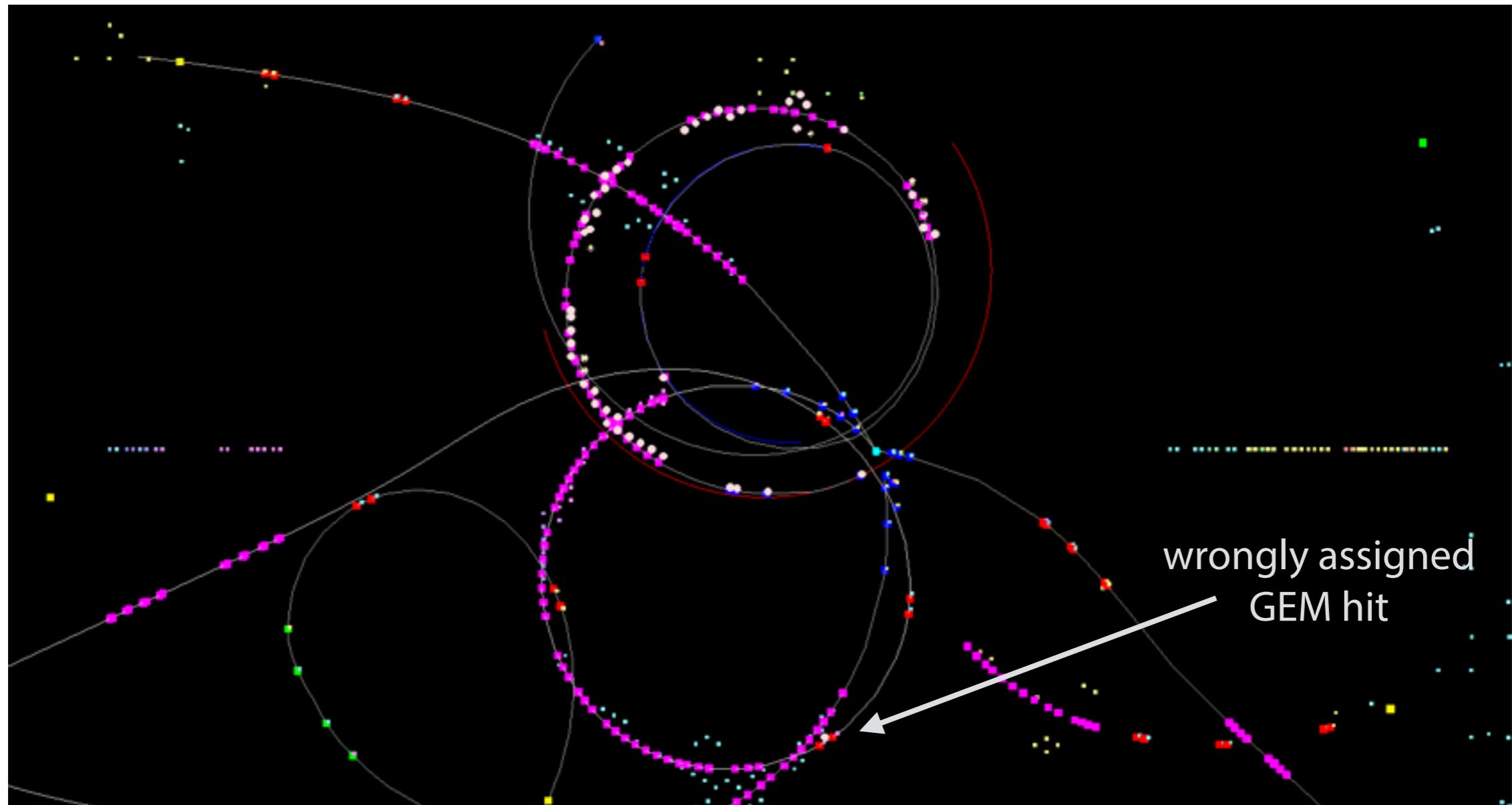
Backup

New Ideal Track Finder: Bug Hunting



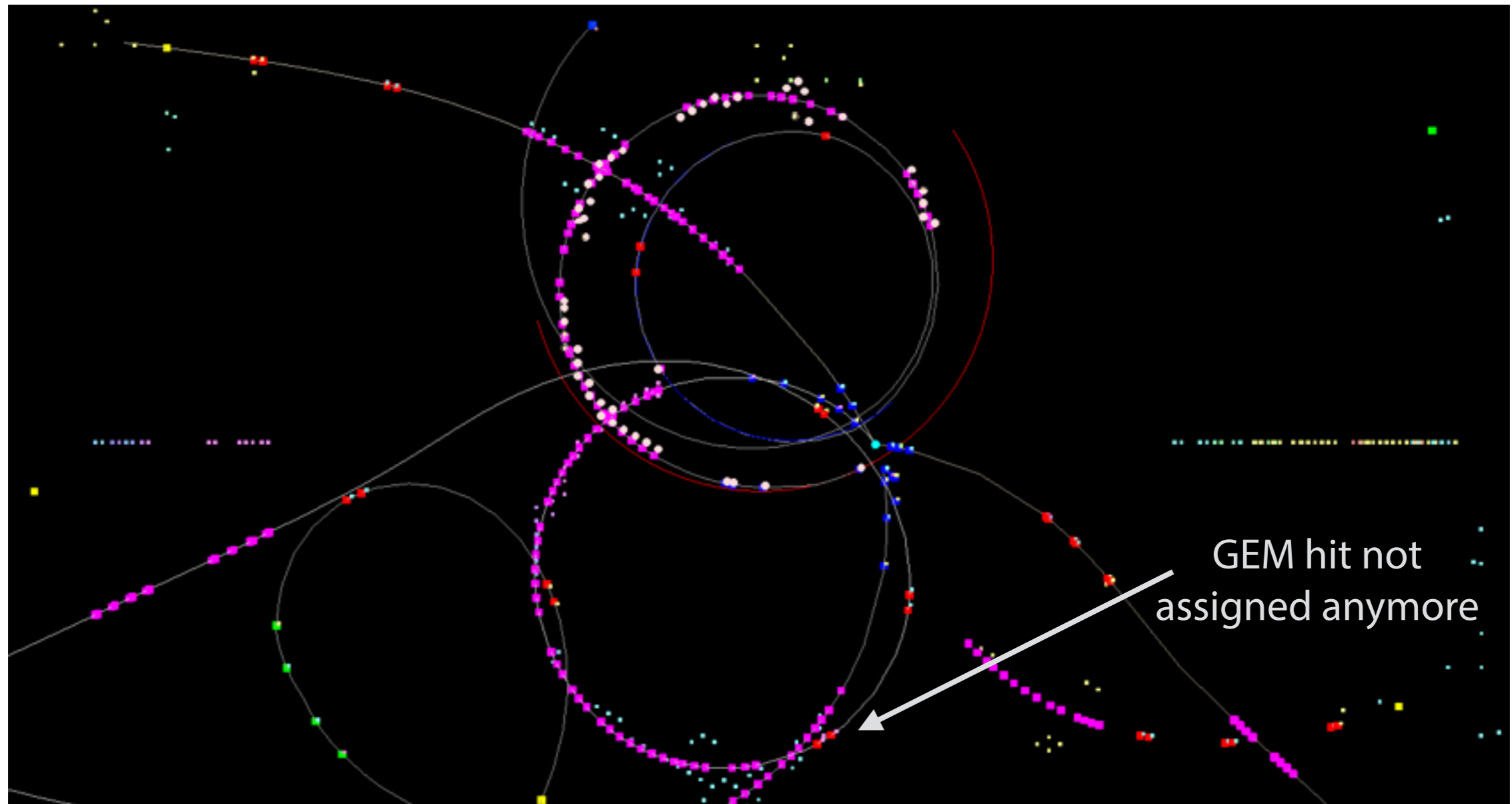
- PndRecoKalmanTask activated
 - Track **start** wrong (STT instead of MVD)
 - GEM hit messes things up

New Ideal Track Finder: Bug Hunting



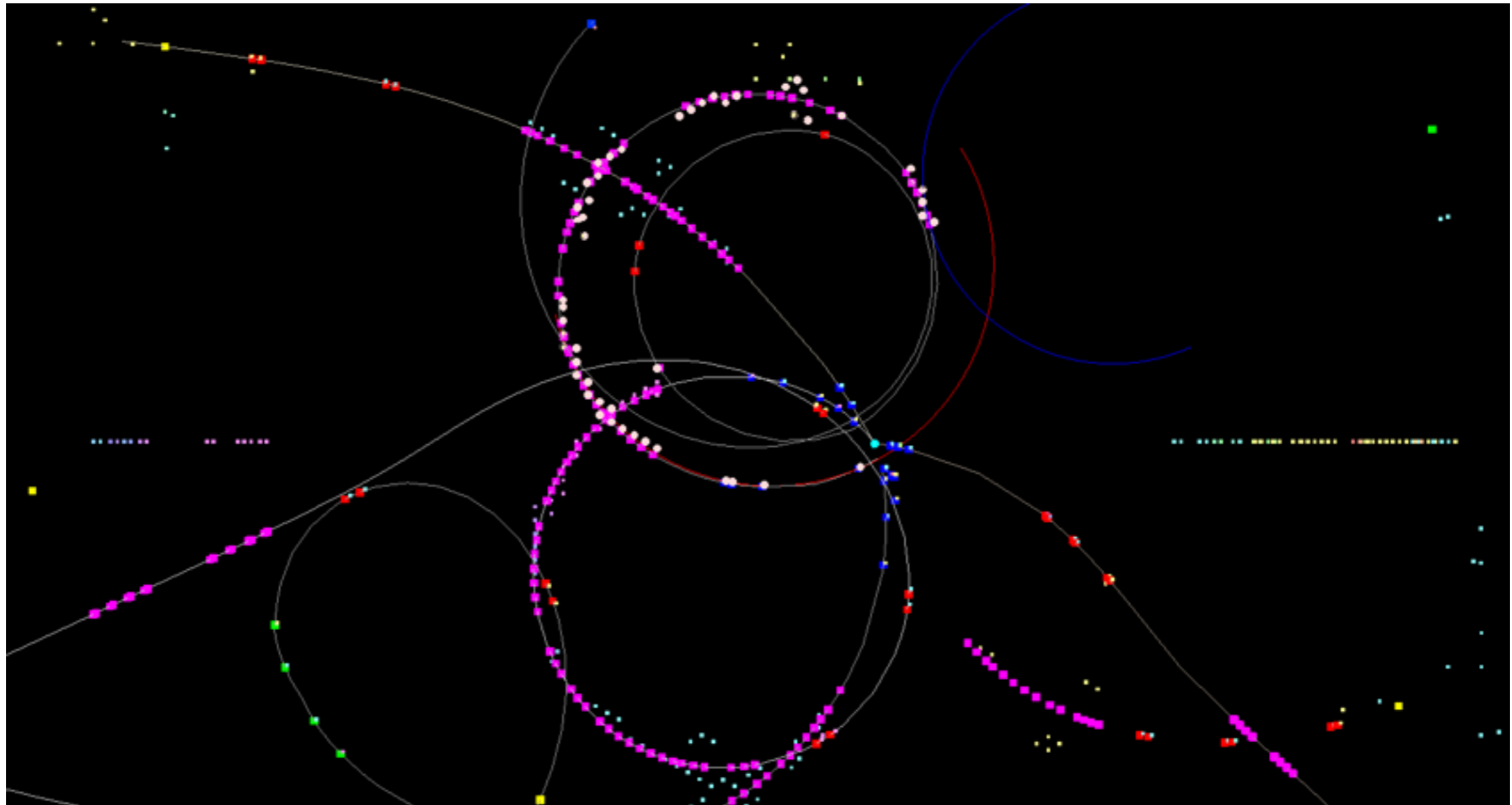
- PndRecoKalmanTask disabled
 - Track **start** and **end** seems legit
 - Still wrongly assigned GEM hit

(Intermediate) Solution



- Disable use of GEM hits with more than one MC point
- Track seems legit (**start** & **end**), no false hit anymore

(Intermediate) Solution with Kalman



- PndRecoKalmanTask activated again
- Track **start** seems legit but changes charge sign towards **end**?