BC Reco Evaluation

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Algorithm by E.P. Hartouni

1. Hit Association
2. Track Finding
3. View Matching
4. Track Fitting

Algorithm parameters

TrkFind_n = 5

ViewMatch_n = 3

Event Sample

Scanned first 100 events in run 10831

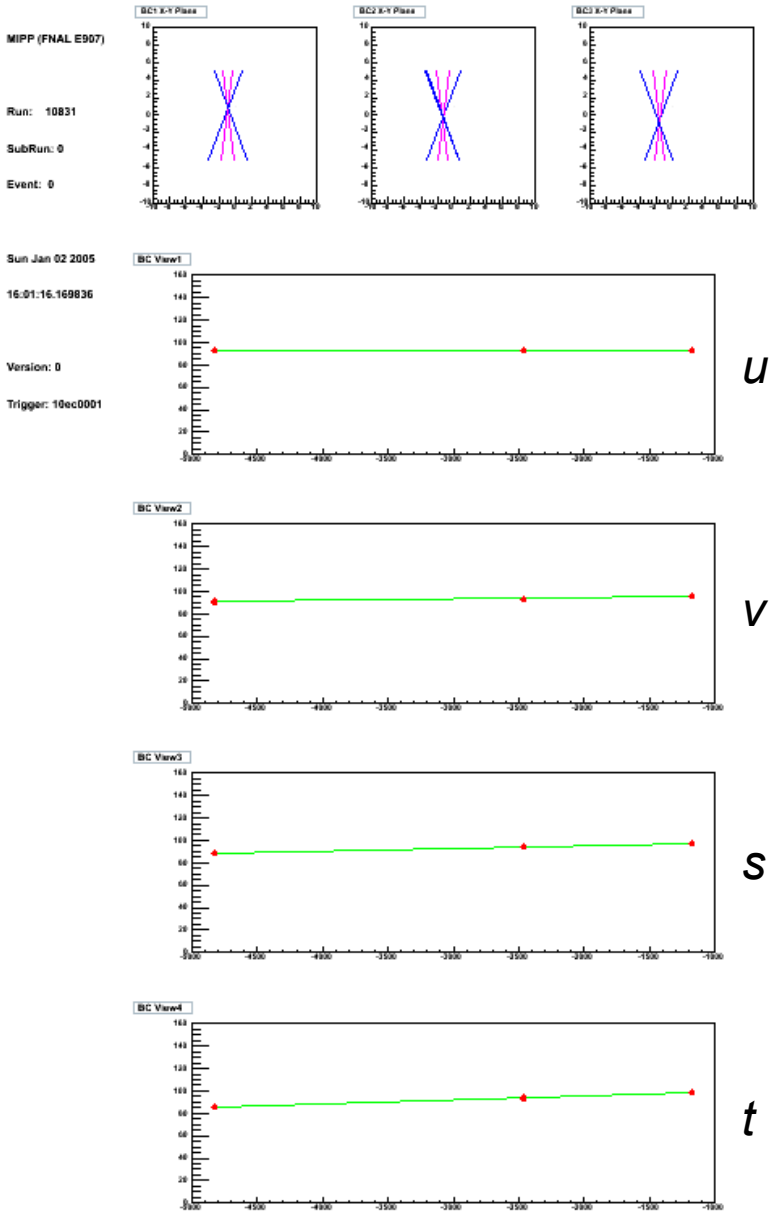
→ 96 events have fitted tracks

- 7 events have too many fitted tracks
- 1 event has only 1 fitted track (should be 2?)

→ 4 events did not reconstruct a track

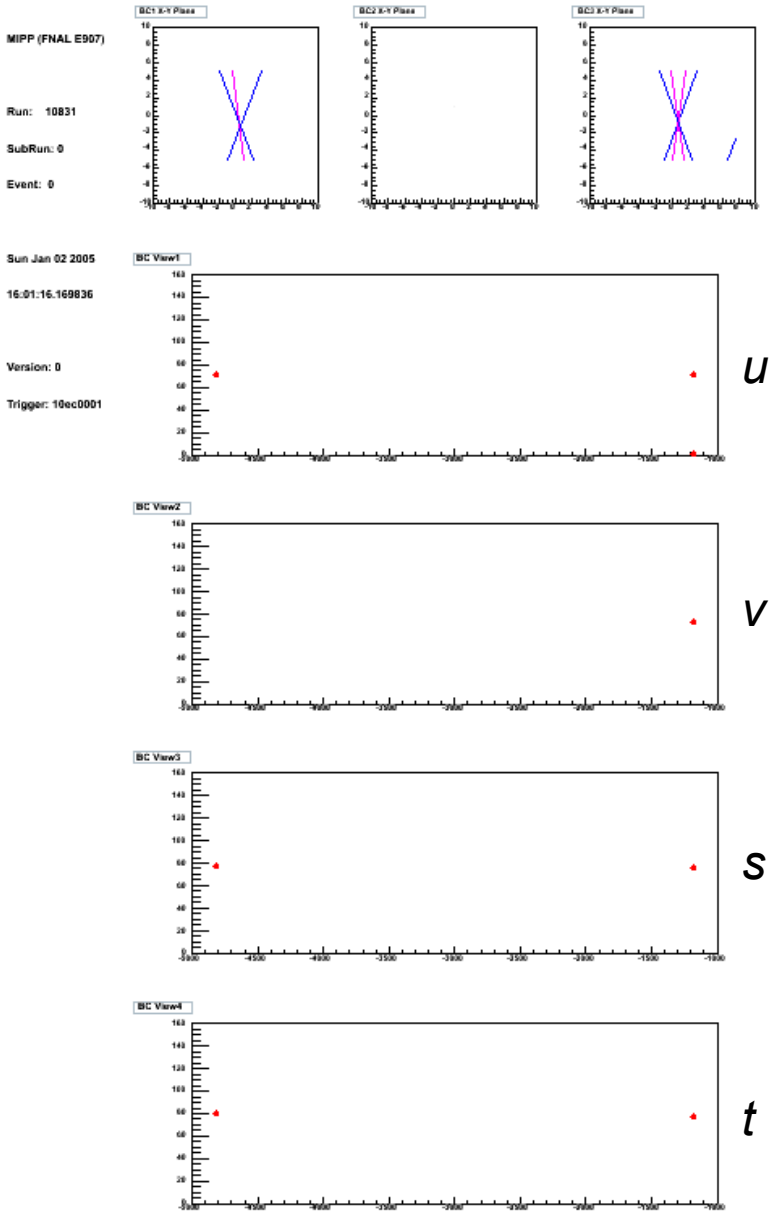
Reconstruction problems generally fall into a few distinct categories……

Good Event



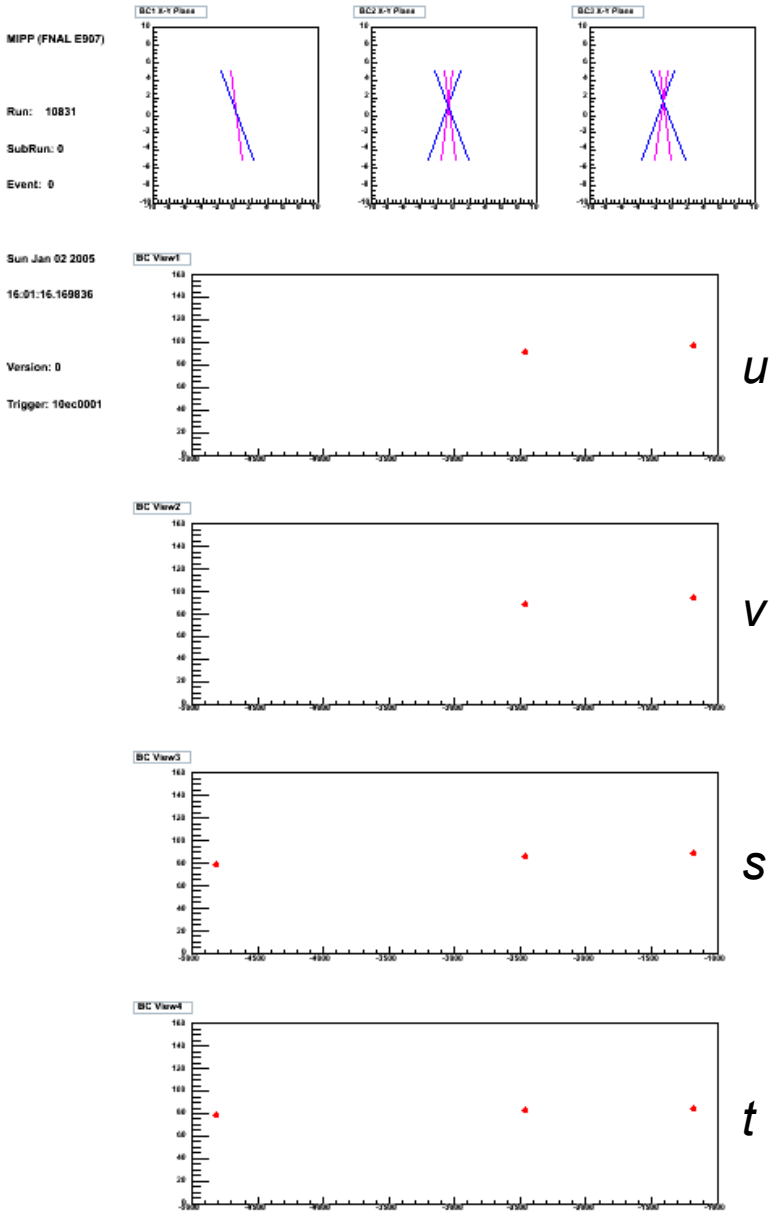
- Event #0
- One hit per plane in each chamber

No Fitted Track



- Event #2
- Failure in TrkFind
  - No hit in BC2

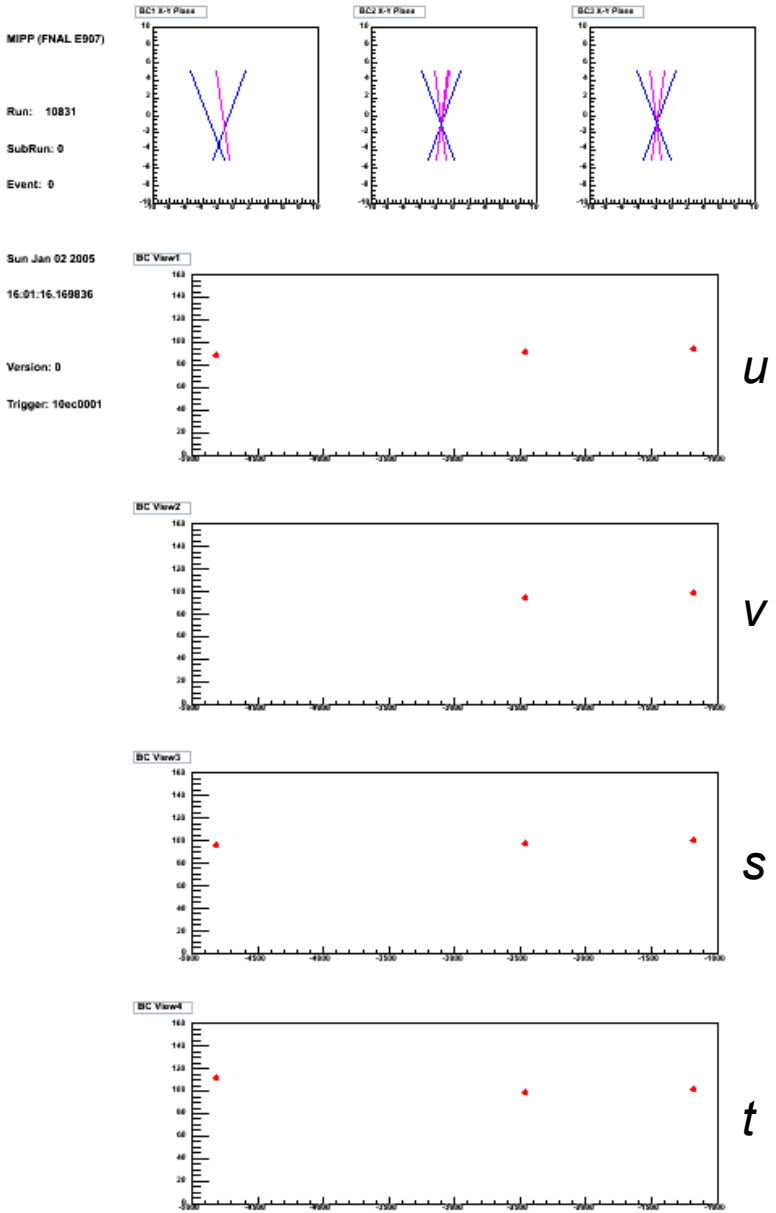
No Fitted Track



- Event #39
- Failure in TrkFnd & ViewMatch

  No track in u & v views since there are no hits in BC1 in these two views, so impossible to match tracks

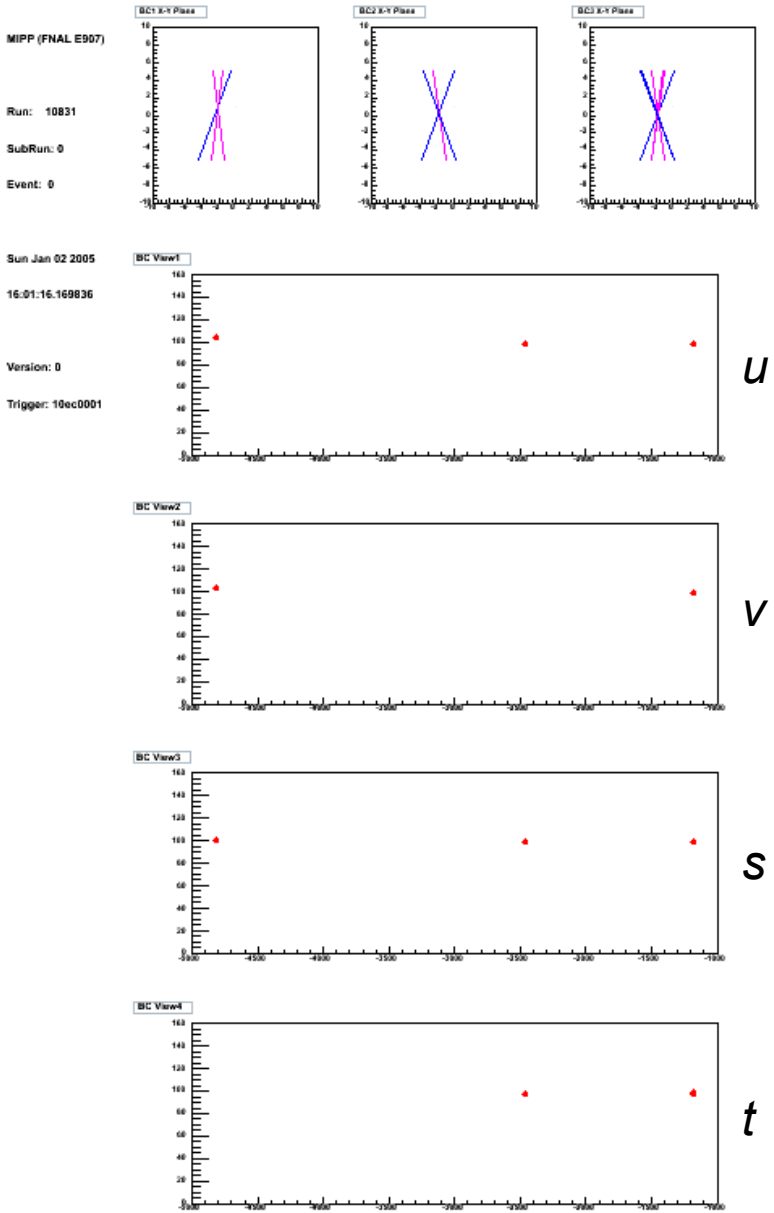
No Fitted Track



- Event #70
- Failure in ViewMatch

  Given u-s view pair, there are no matching hits in BC1 view-v (non-existent) and view-t (hit too far away)

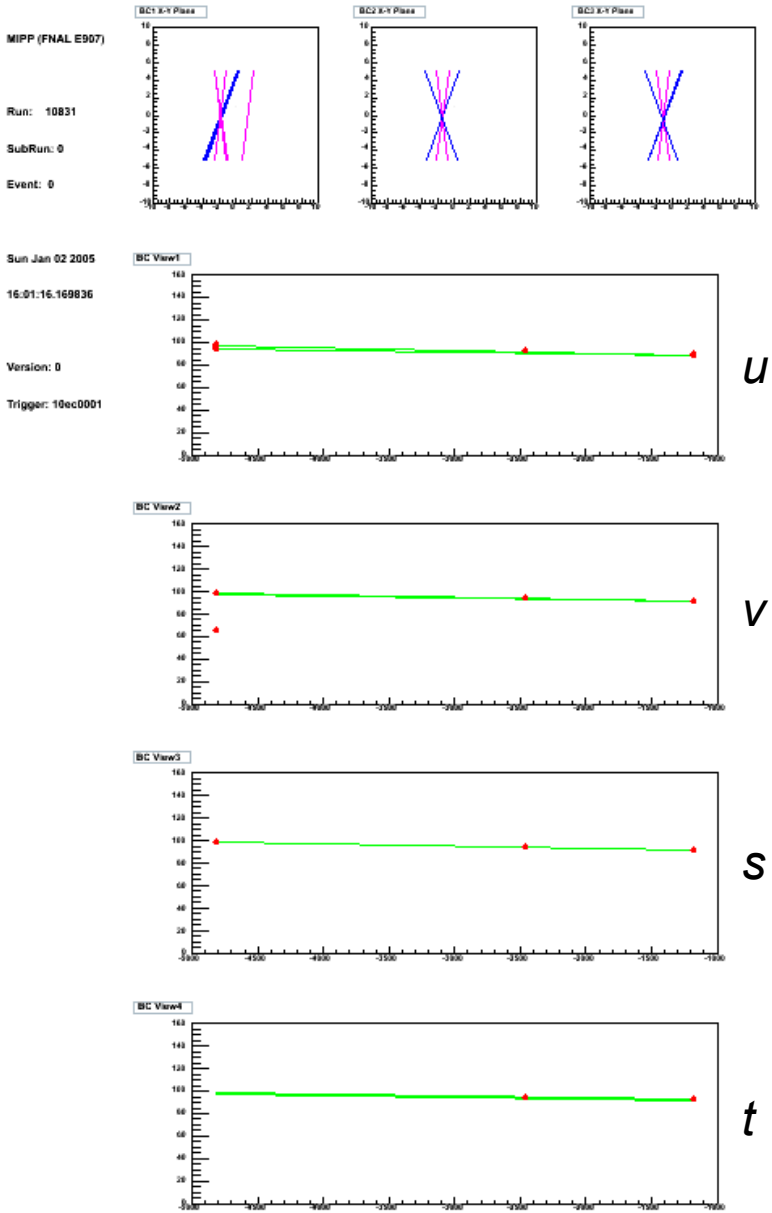
No Fitted Track



- Event #99
- Failure in ViewMatch

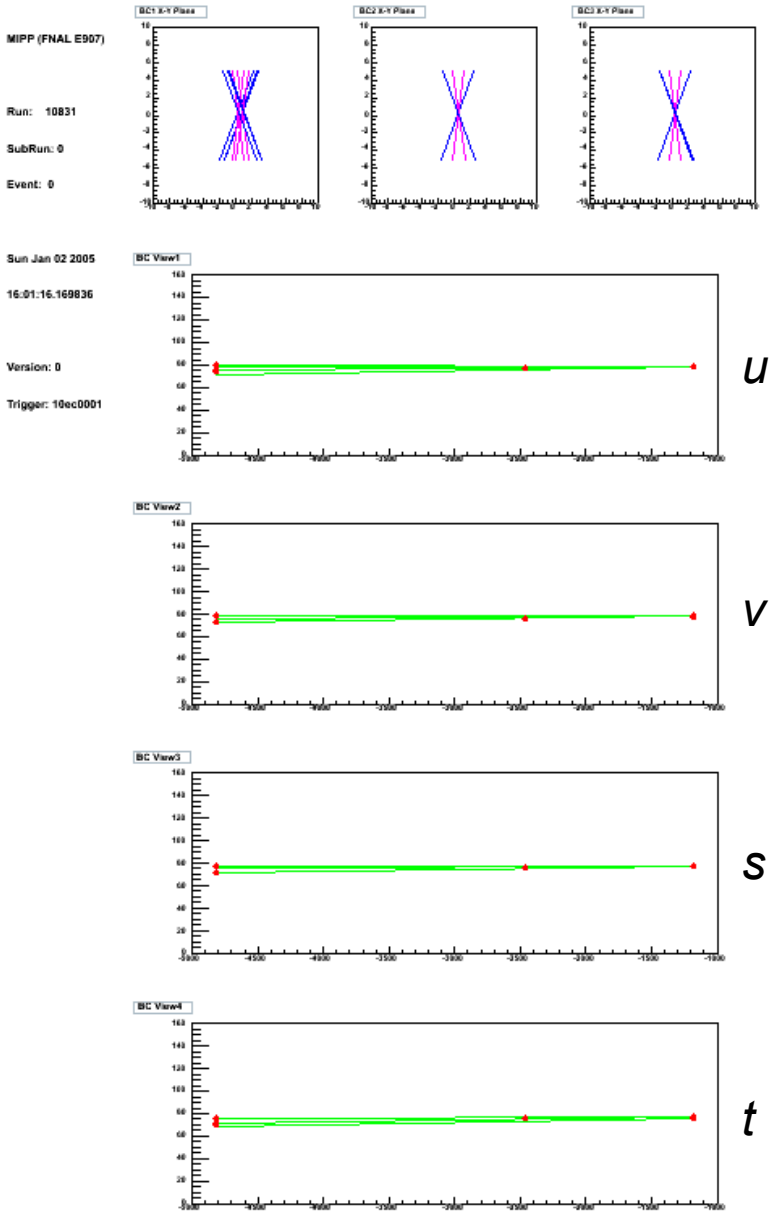
  Given u-s view pair, there are no matching hits in BC2 view-v and BC1 view-t

Too Many Tracks



- Event #15
- Two fitted tracks
  - 4 hits in BC1 plane 1
- Tracks are not determined to be identical because of cut in FitTrk

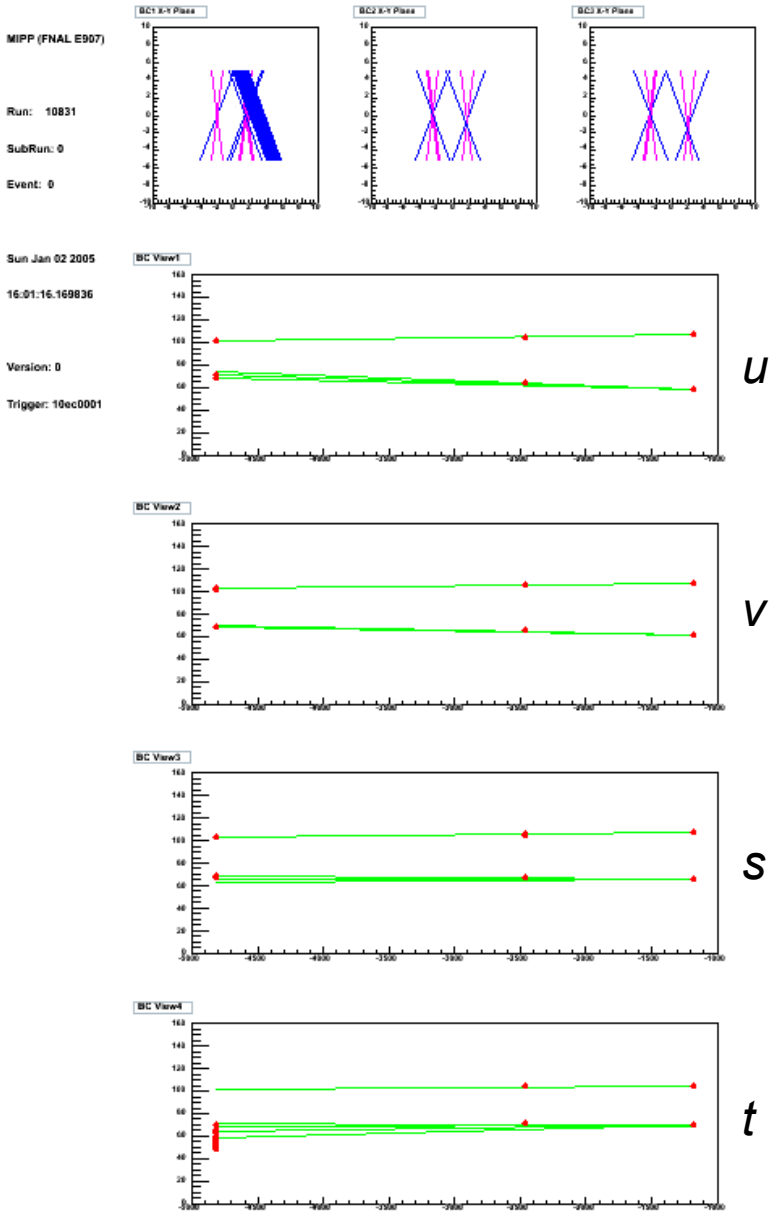
Too Many Tracks



- Event #24
- Four fitted tracks

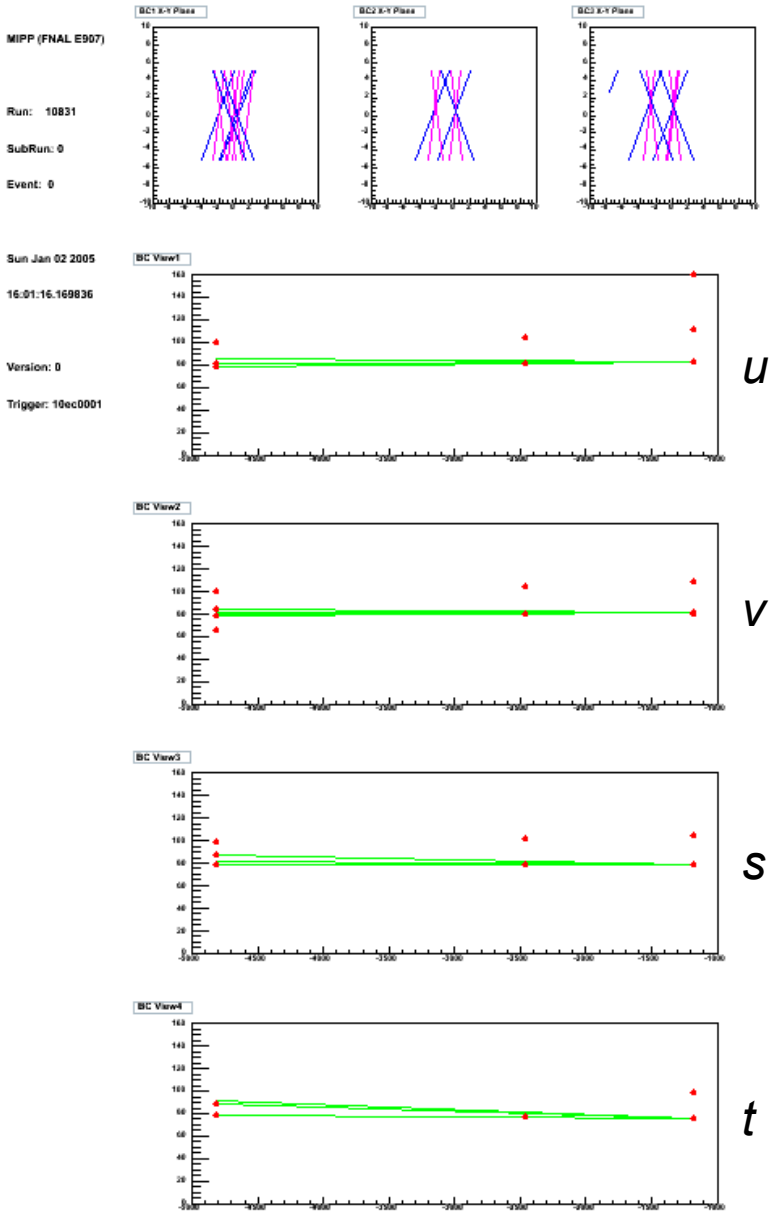
  Multiple hits in BC1

Too Many Tracks



- Event #44
- Four fitted tracks
  - Multiple hits in BC1

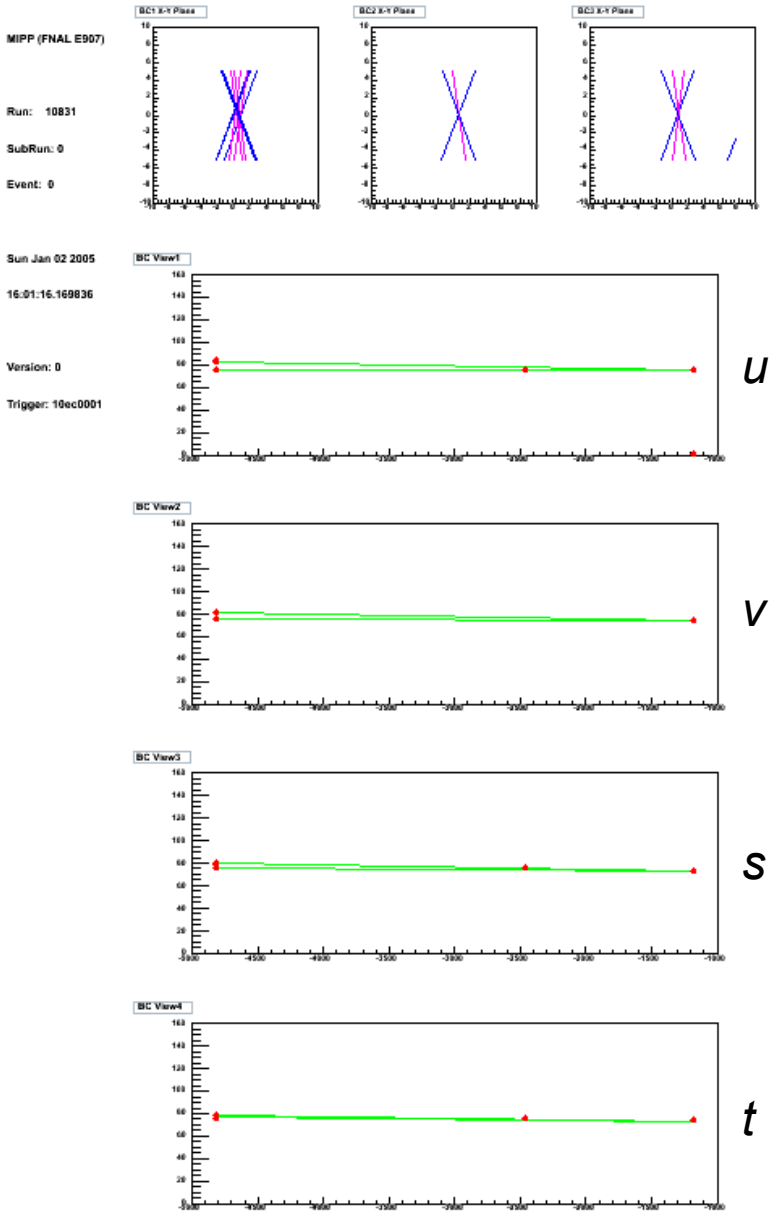
Too Many Tracks



- Event #45
- Five fitted tracks

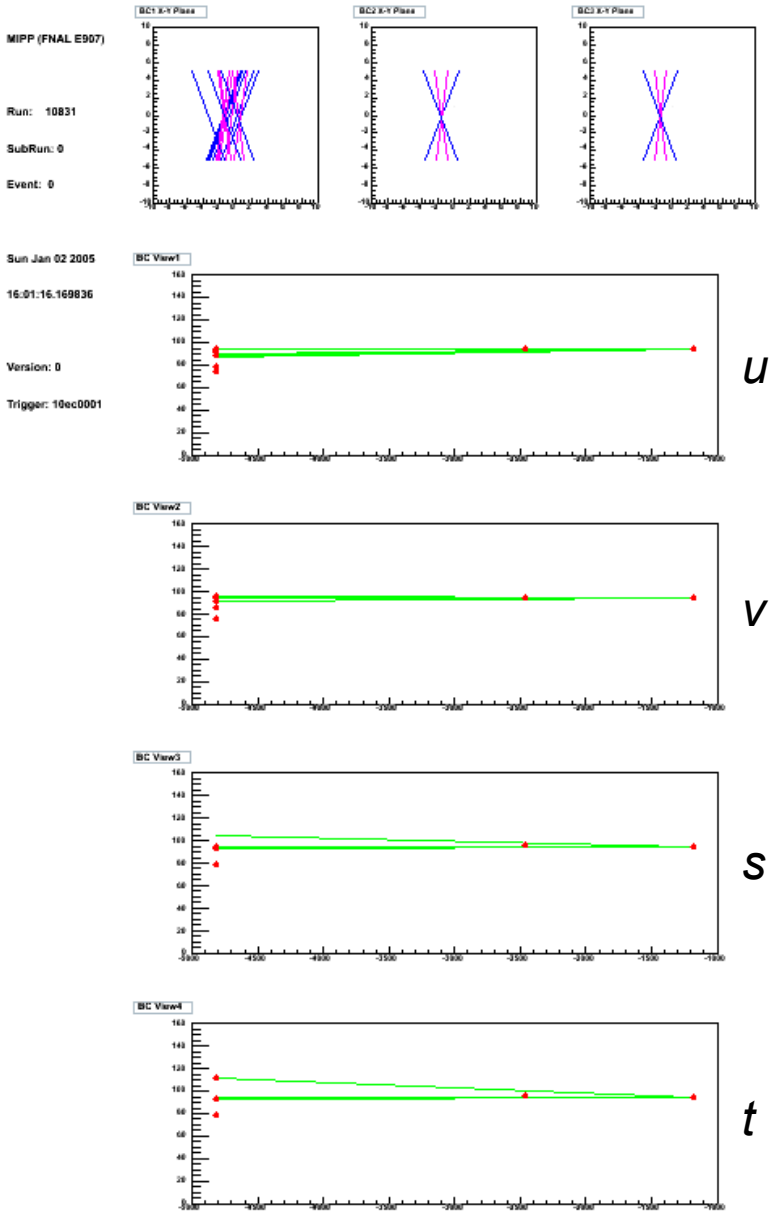
  Multiple hits

Too Many Tracks



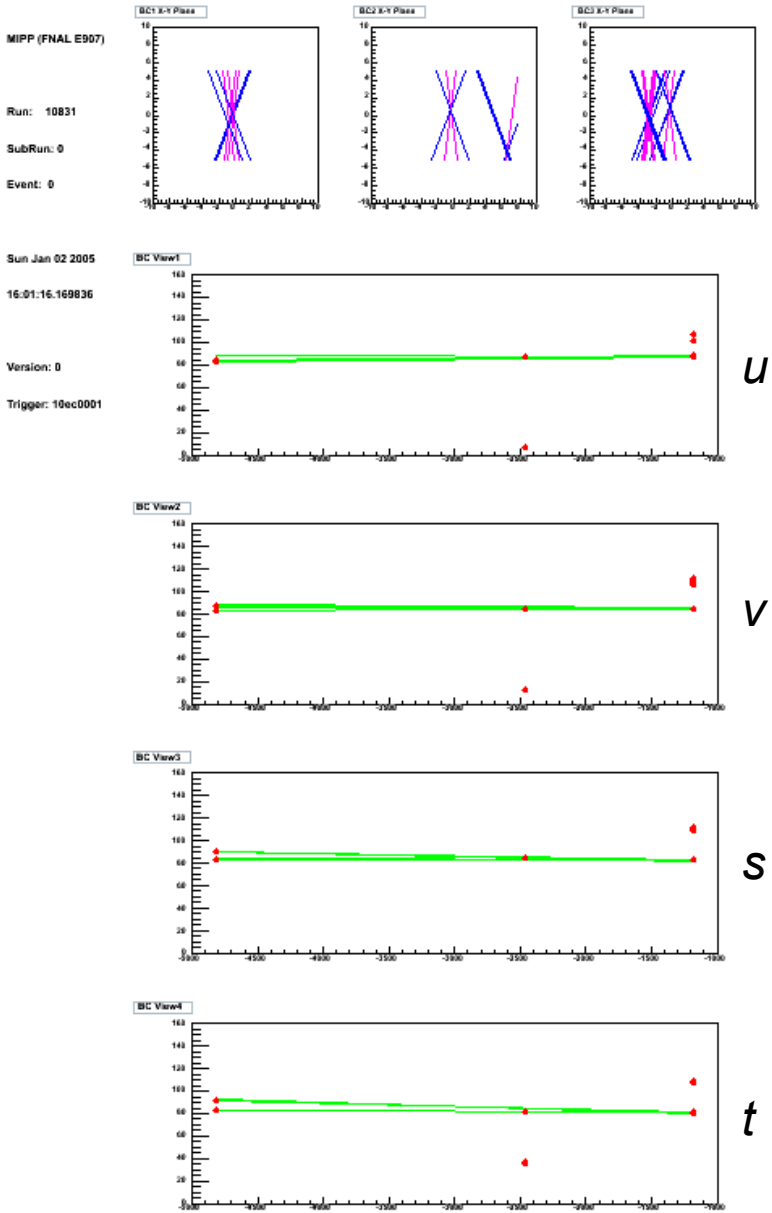
- Event #52
- Two fitted tracks
  - Multiple hits in BC1

Too Many Tracks



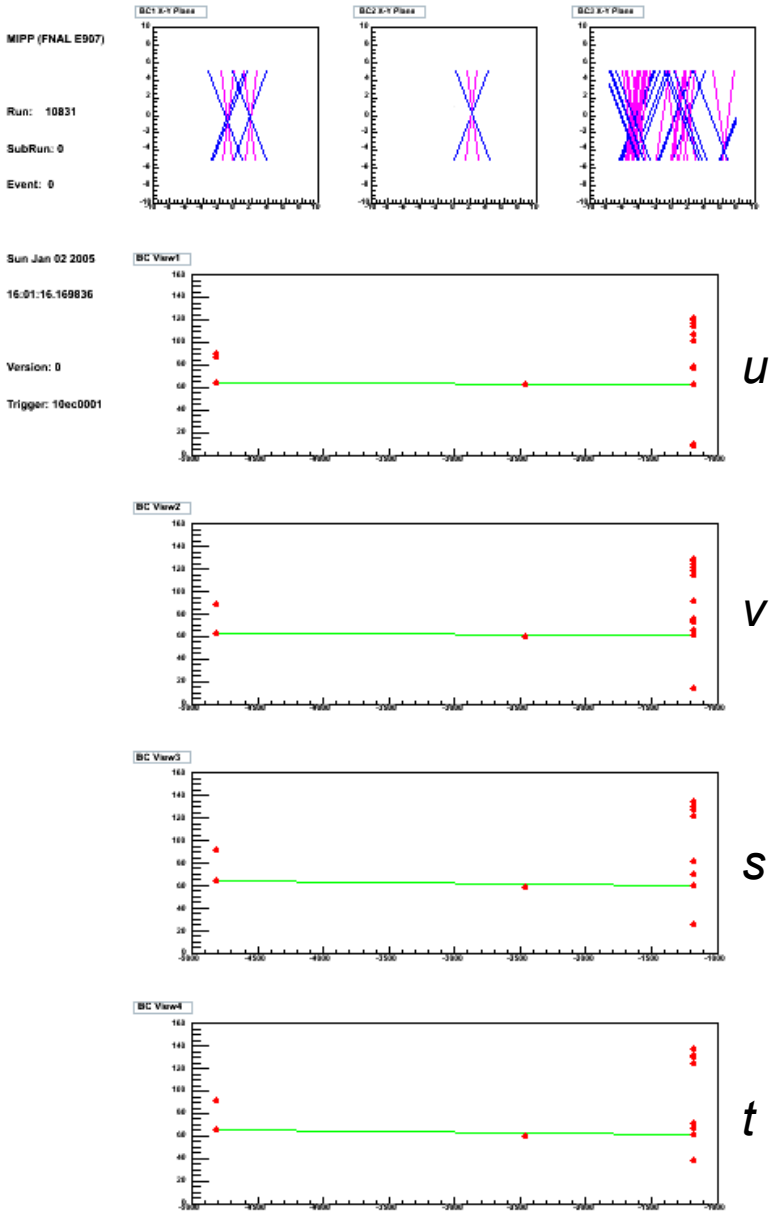
- Event #63
- Four fitted tracks
  - Multiple hits in BC1

Too Many Tracks



- Event #66
- Four fitted tracks
  - Multiple hits in BC1

Noisy Event



- Event #22
- Missing one fitted track?

  Noisy BC3

Conclusion

- BCReco efficiency is high
  - 96% found tracks
  - 88% with no obvious reconstruction problems
- Reco problems can be classified as follows:
  - Missing hits
    - Chamber inefficiencies
  - Similar tracks are not being identified and removed
    - Noisy planes create false tracks