MESSY Events

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Status

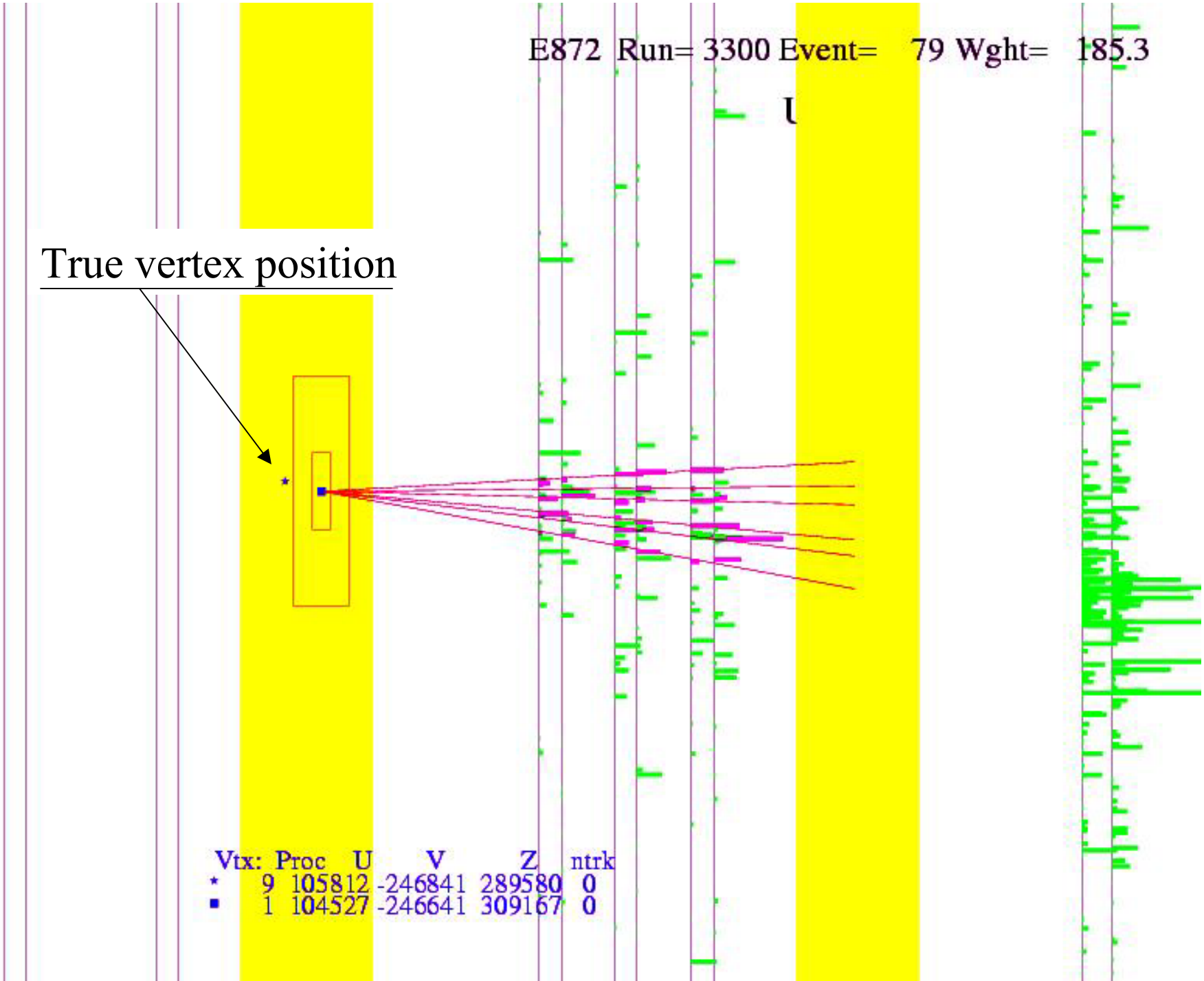
- Checked all events with no prediction or not located
  - Made ~130 vertex predictions and sent to Nonaka
  - Rejected ~50 events
  - 888 neutrino events remain
  - Classified 140/888 events as MESSY = 16%
    - MESSY = no reliable SF lines pointing to a vertex, too many hits
- MESSY events are deferred to Phase 3

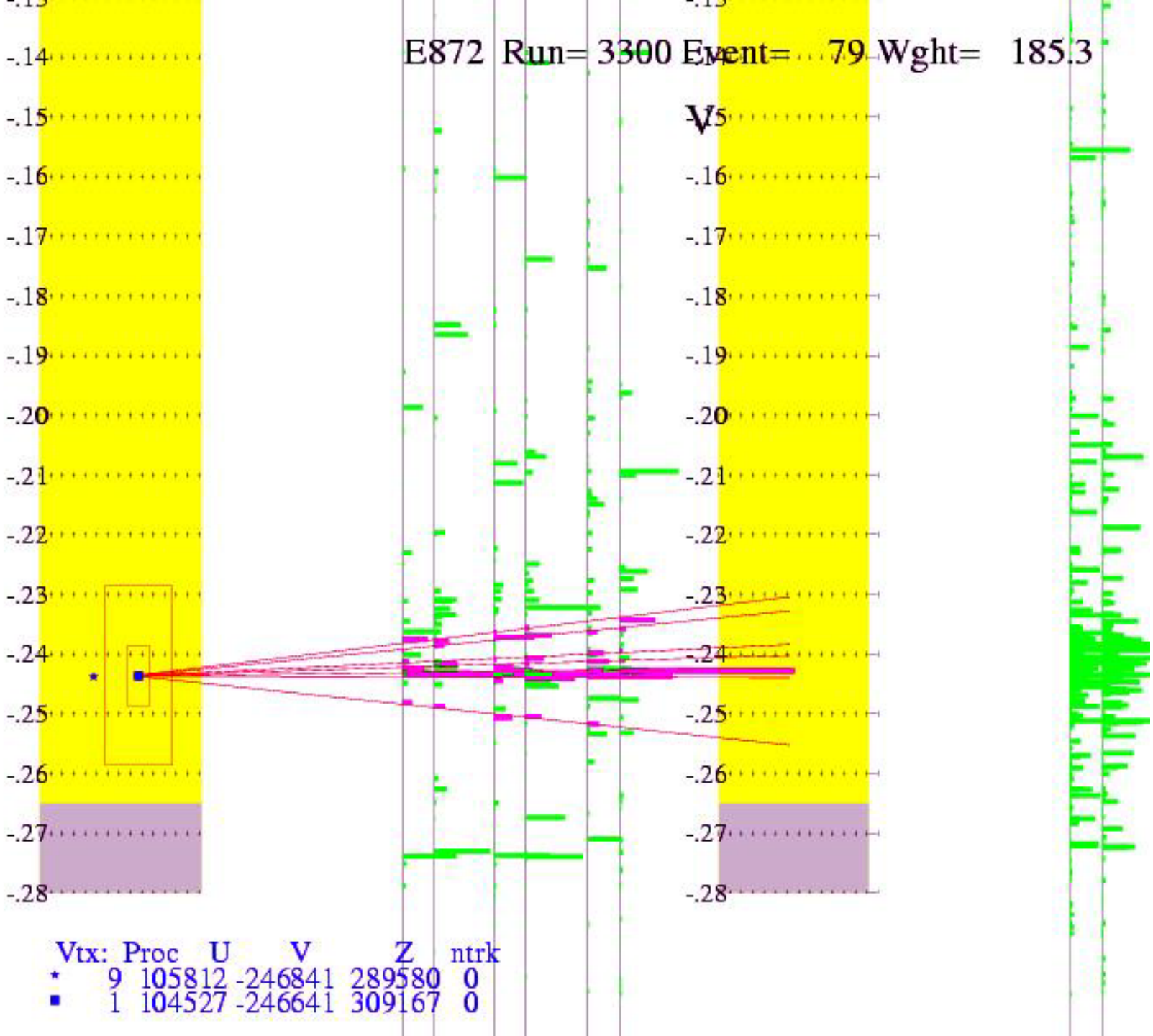
MESSY characteristics

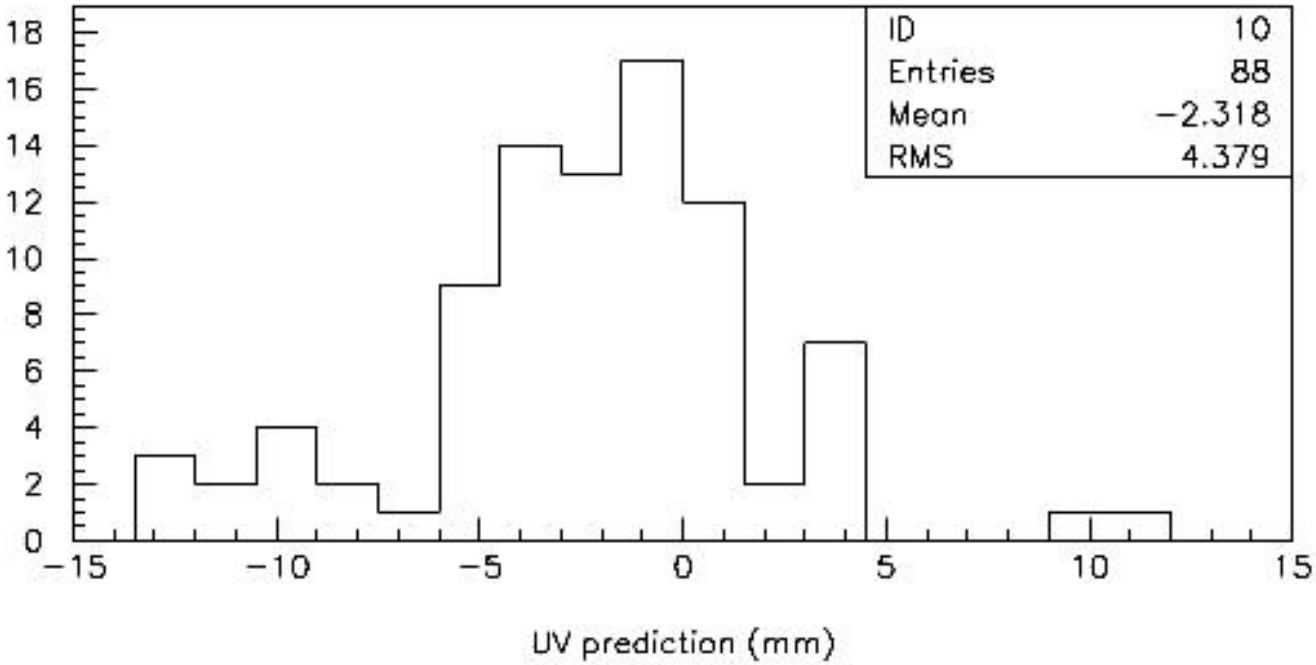
- Visually scanned 200 MC events to select MESSY events
  - 20 events (Weighted fraction = 19%)
  - These events all have large SFT energy in the station downstream of the vertex
  - Defined new MESSY criteria: Number of MIP's in event station > 650 to get more events without visual scannning
- Identified MESSY events in 1k MC sample
  - Found 86/1k (14% weighted fraction)
  - 70% CCe, 15% CCmu, 5% CCtau, 10% NC
  - Fraction of all CCtau events in MESSY = 8%

Vertex Prediction

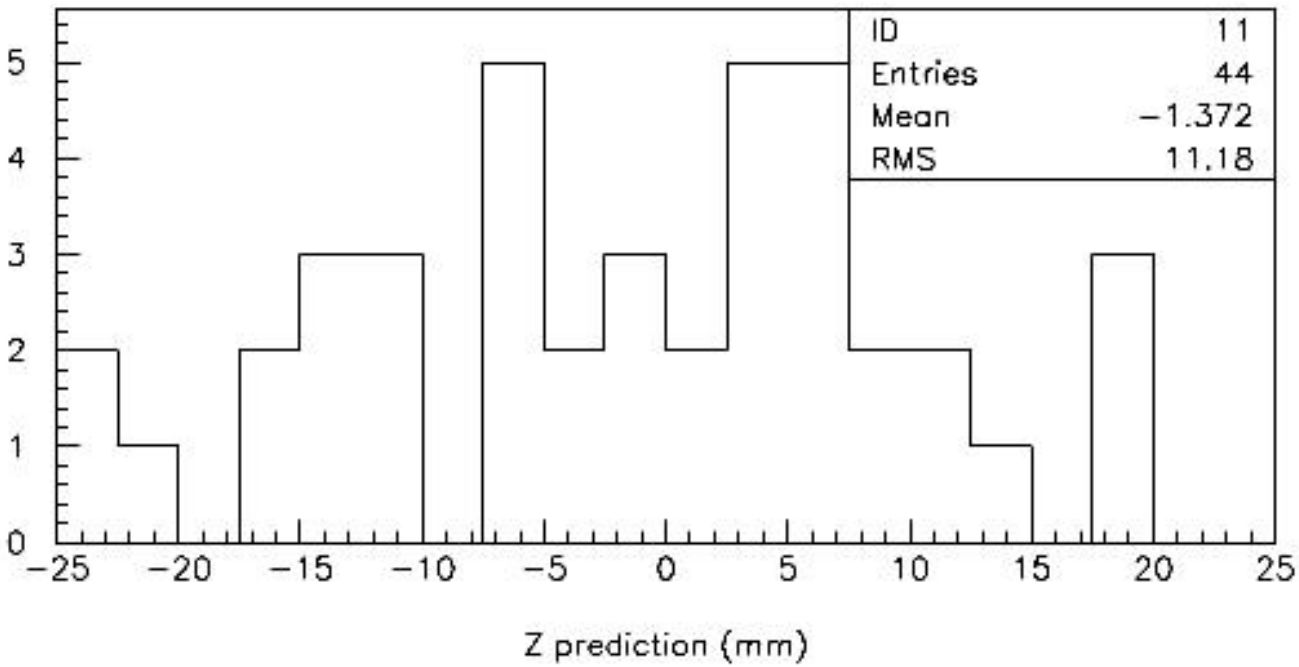
- Attempted and failed to develop code to make vertex predictions
- Vertex prediction “by eye”
  - Make lines using shower core(s)
  - Assume the vertex is in the upstream part of the target
  - Spend ~10 seconds/SFT view to decide where to put the vertex
  - Display MC truth vertex position (next slides)
  - Write prediction – truth results to file
  - Histogram (NOT weighted…)


E872 Run= 3300 Event= 79 Wght= 185.3
U
True vertex position
Vtx: Proc U V Z ntrk
* 9 105812 -246841 289580 0
■ 1 104527 -246641 309167 0


E872 Run= 3300 Event= 79 Wght= 185.3
V
-.14
-.15
-.16
-.17
-.18
-.19
-.20
-.21
-.22
-.23
-.24
-.25
-.26
-.27
-.28
Vtx: Proc U V Z ntrk
* 9 105812 -246841 289580 0
■ 1 104527 -246641 309167 0

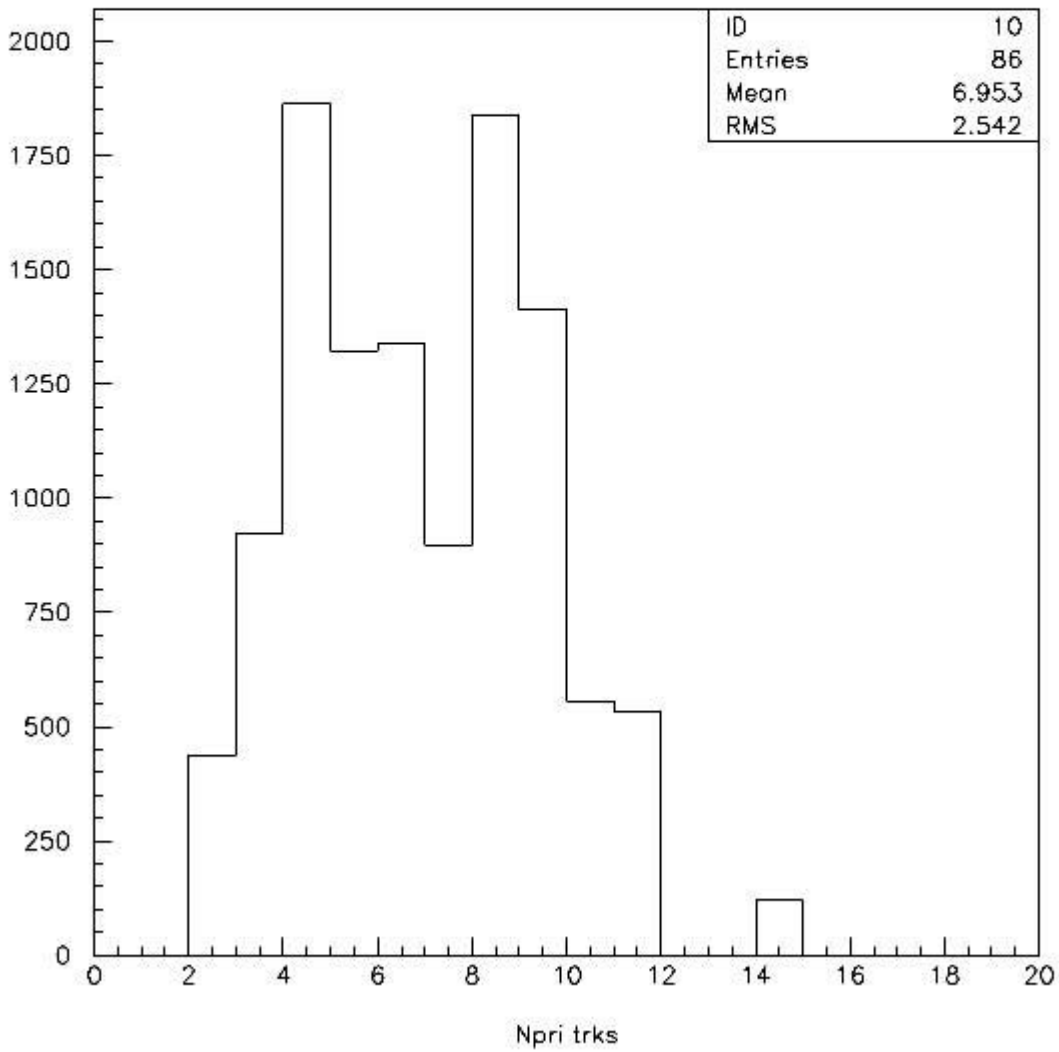


2/3 of events within 1 cm^2



90% of events within 5 cm!

Can these events be located?



Prospects good for location in emulsion if prediction is good and tracks are not badly broken