

Reconstruction Errors

Jake Calcutt
Oct. 16, 2019

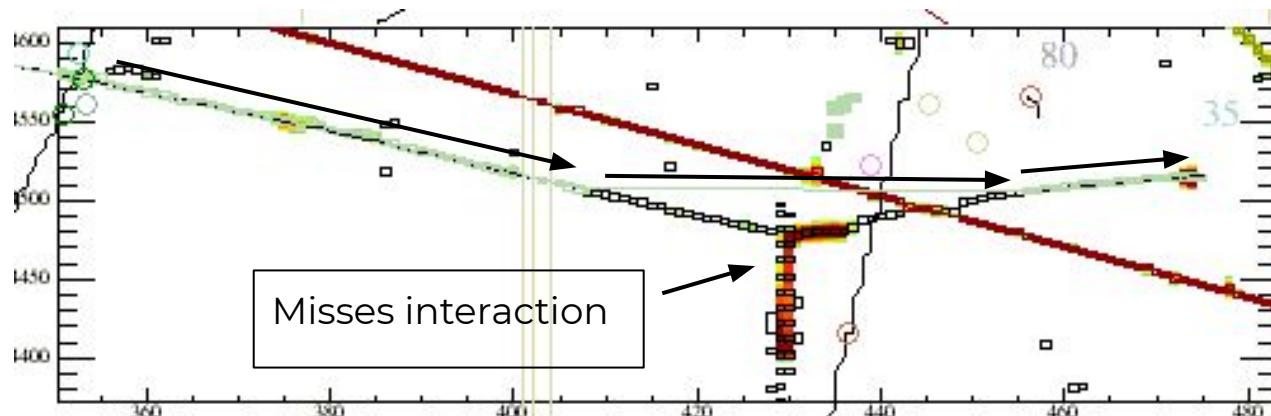
Introduction

Have noticed reconstruction errors related to when Pandora misses kinks/interactions

Sometimes has drastic effect on track in (x,y,z) (Ortho view)

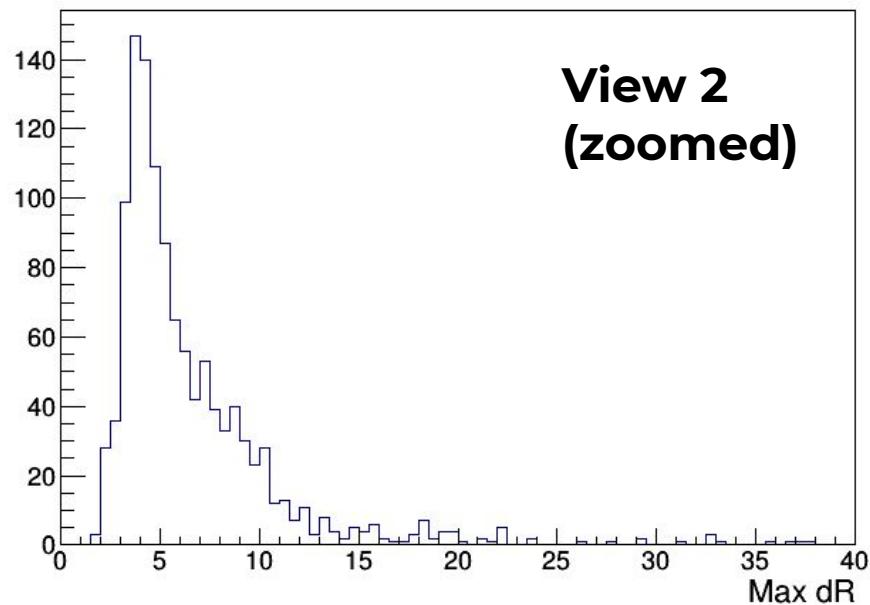
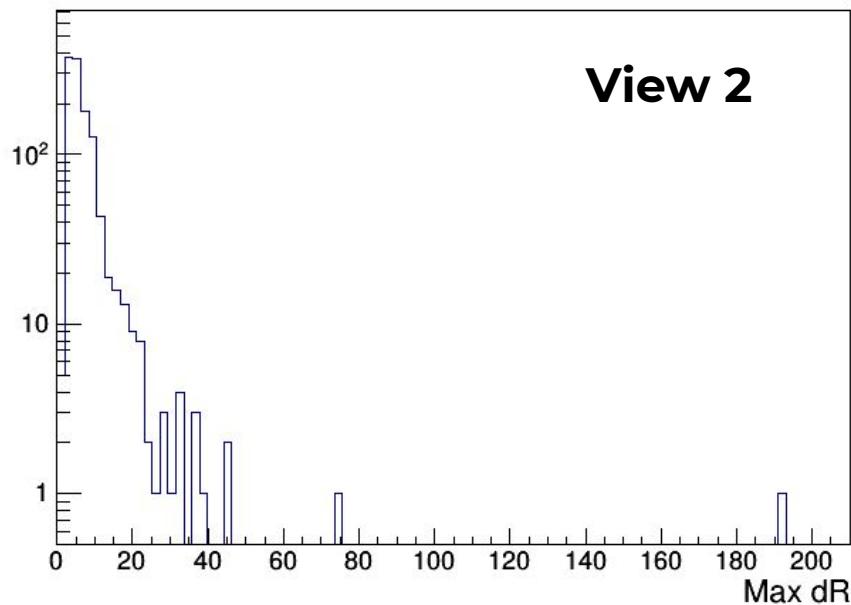
Only looking at beam pion tracks for now

Using PDSPProd2_MC_1GeV_reco_sce_datadriven



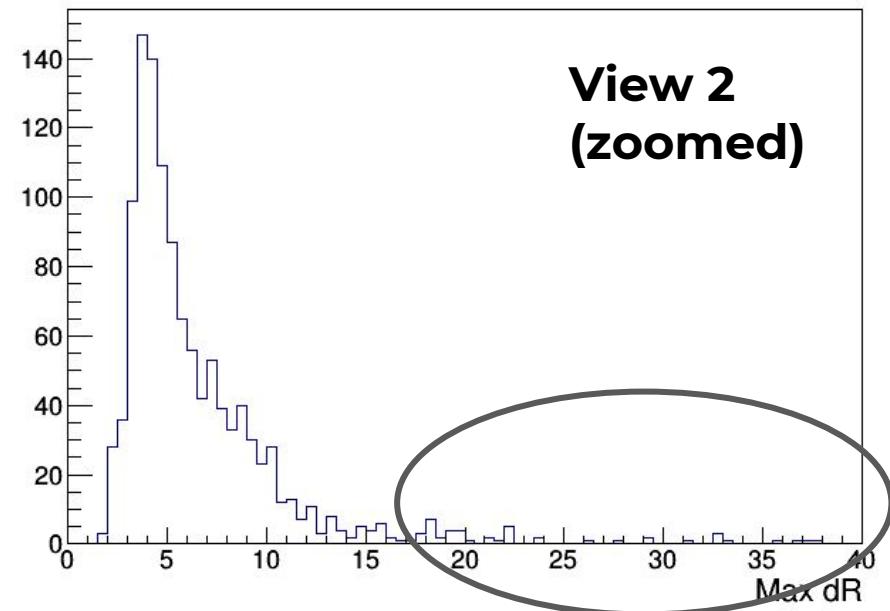
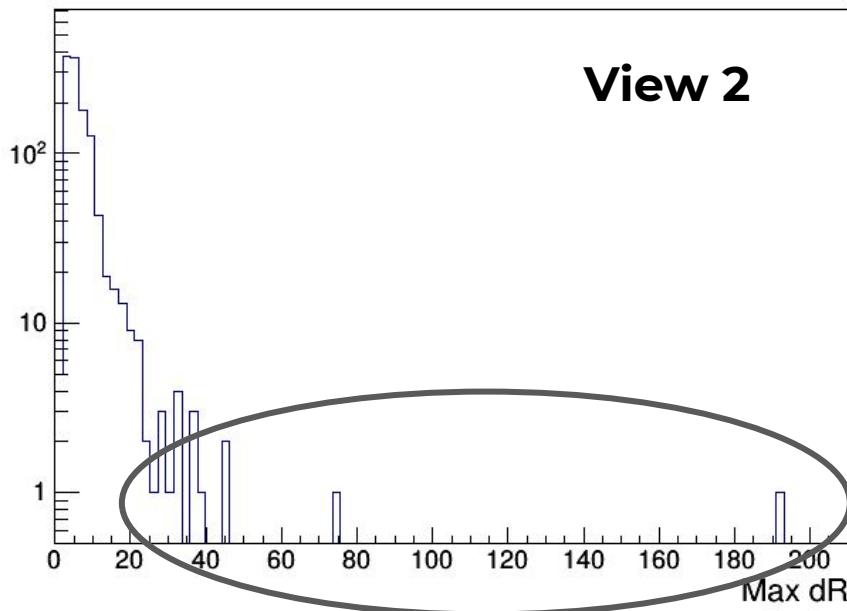
Identifying Metric

Trying to identify: look at the distance between hits in the various 2D views (ticks vs. wire)

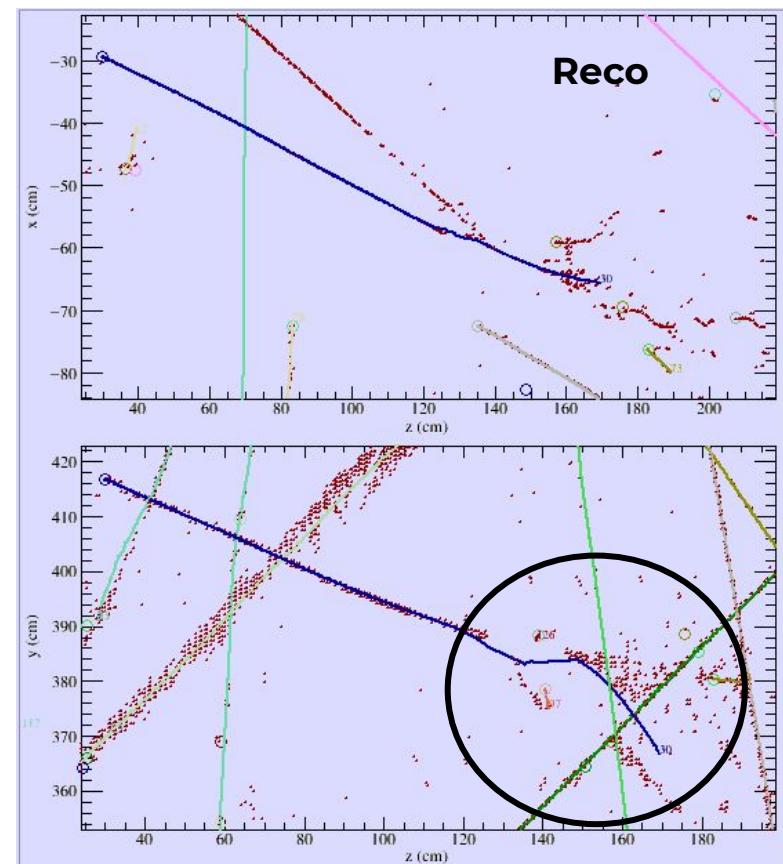
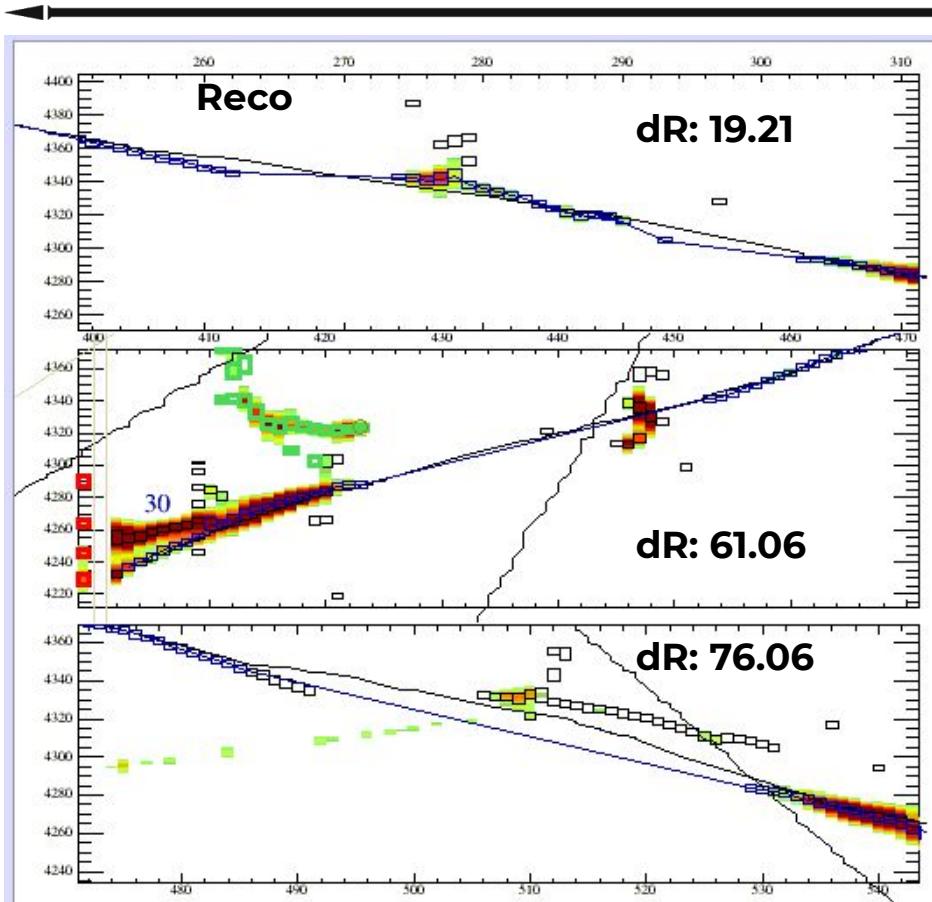


Identifying Metric

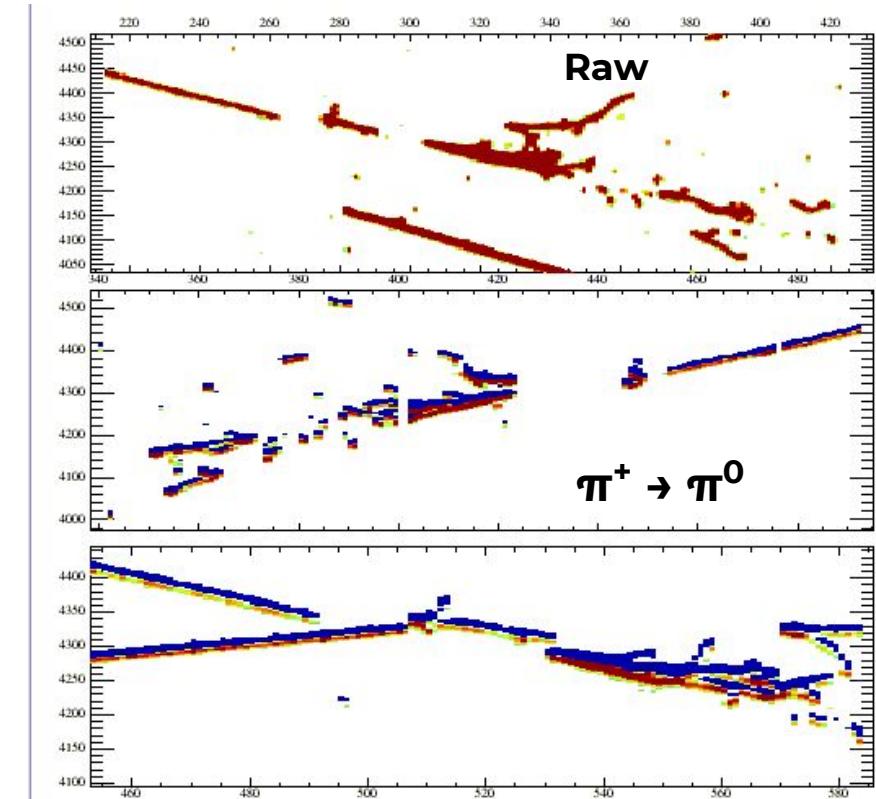
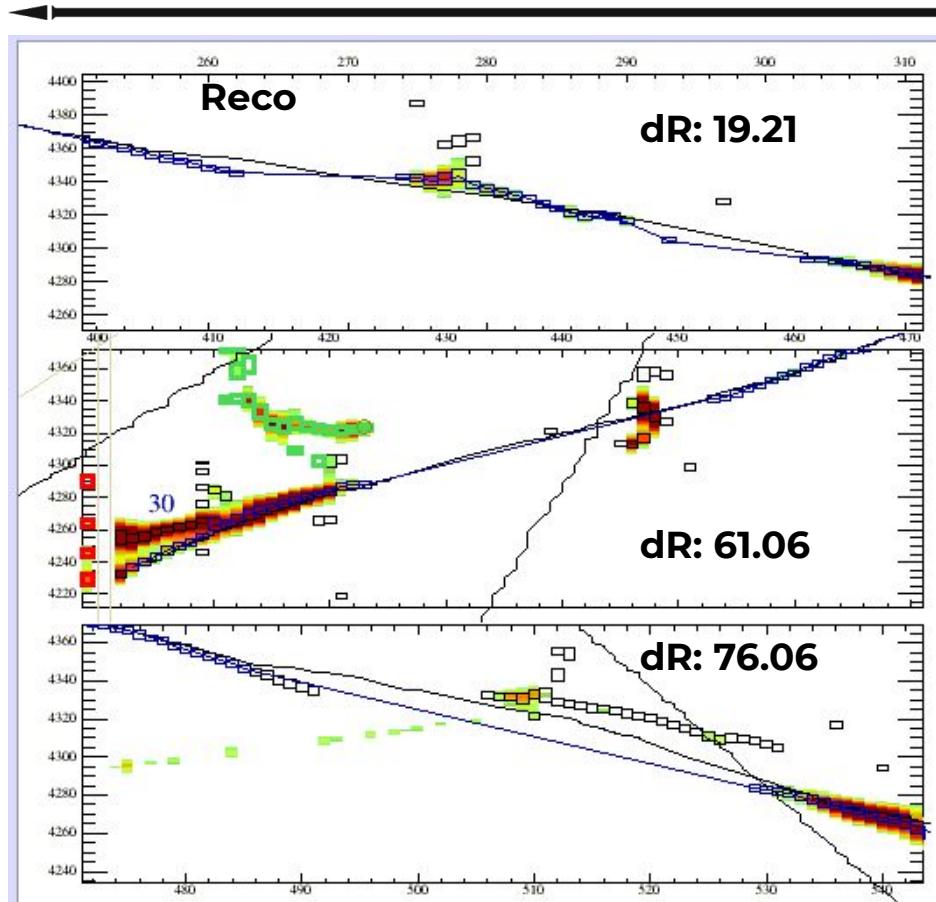
Next slides: $dR > 20$ units in any view



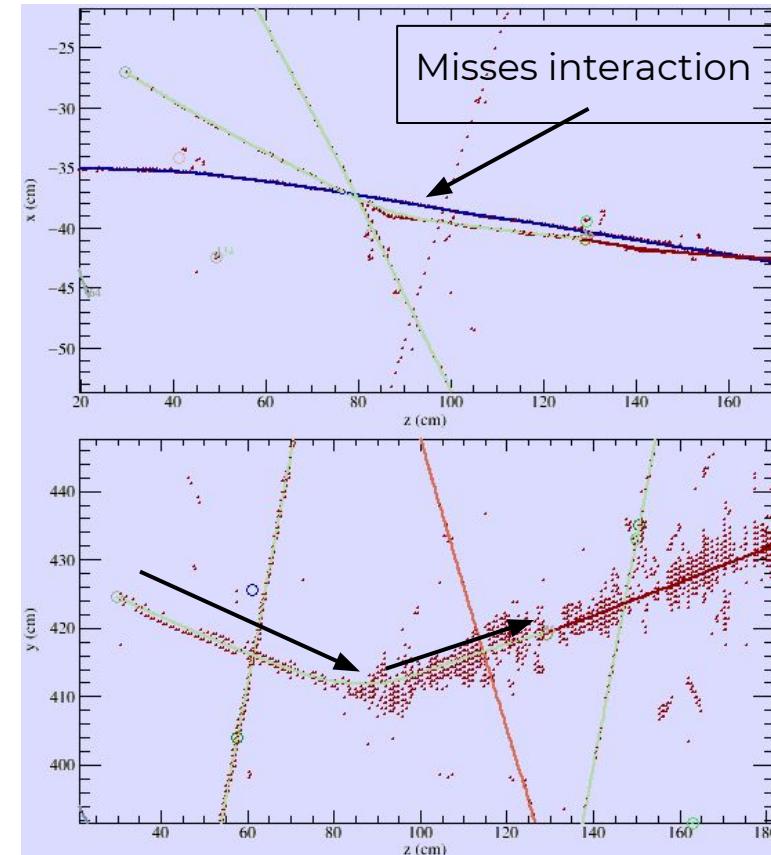
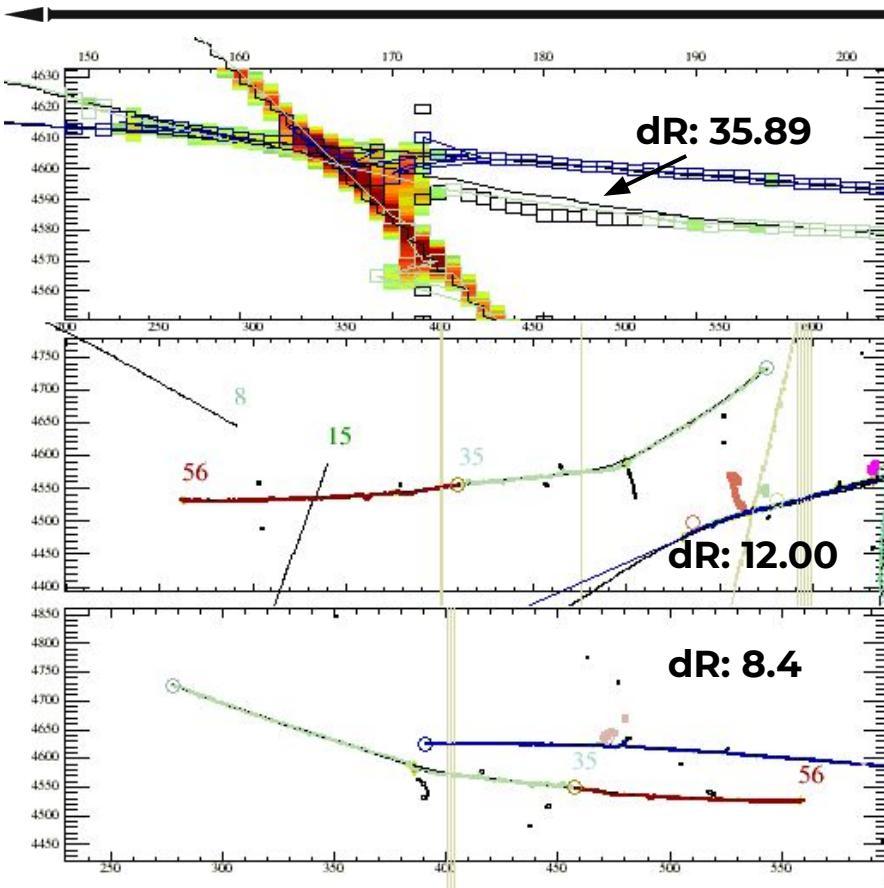
Examples -- Run 23376567, Event 428



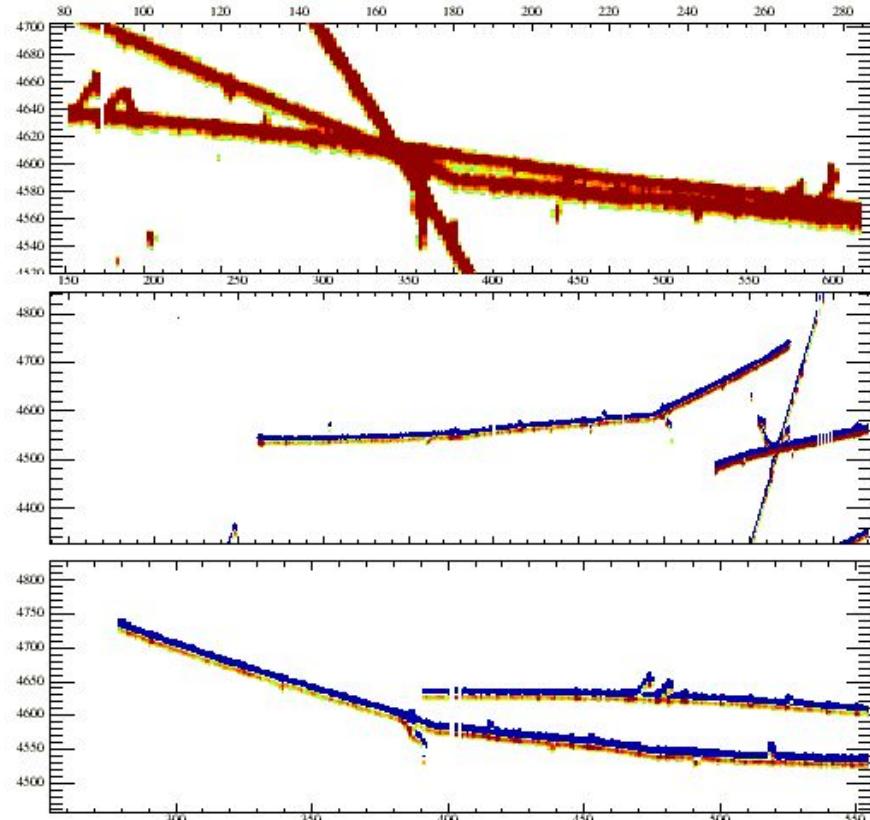
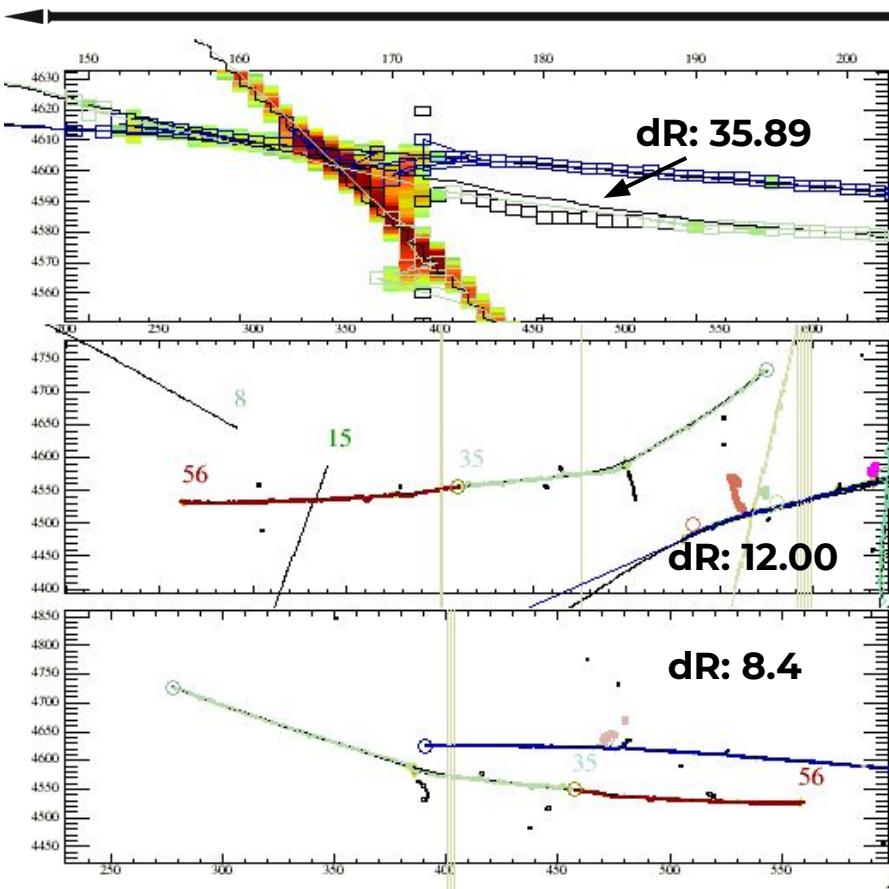
Examples -- Run 23376567, Event 428



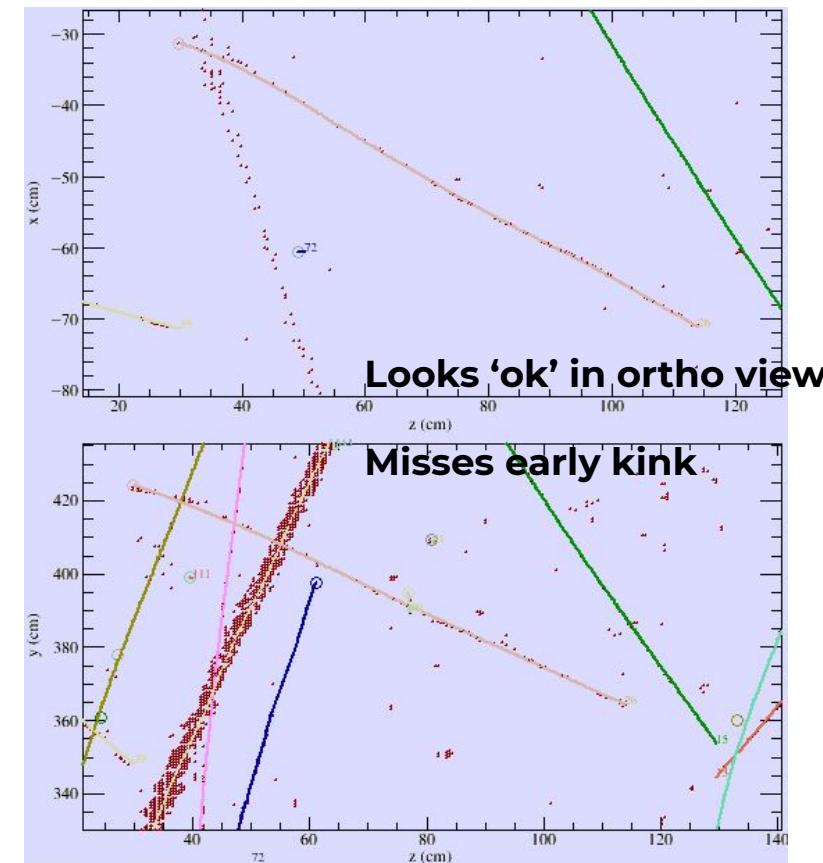
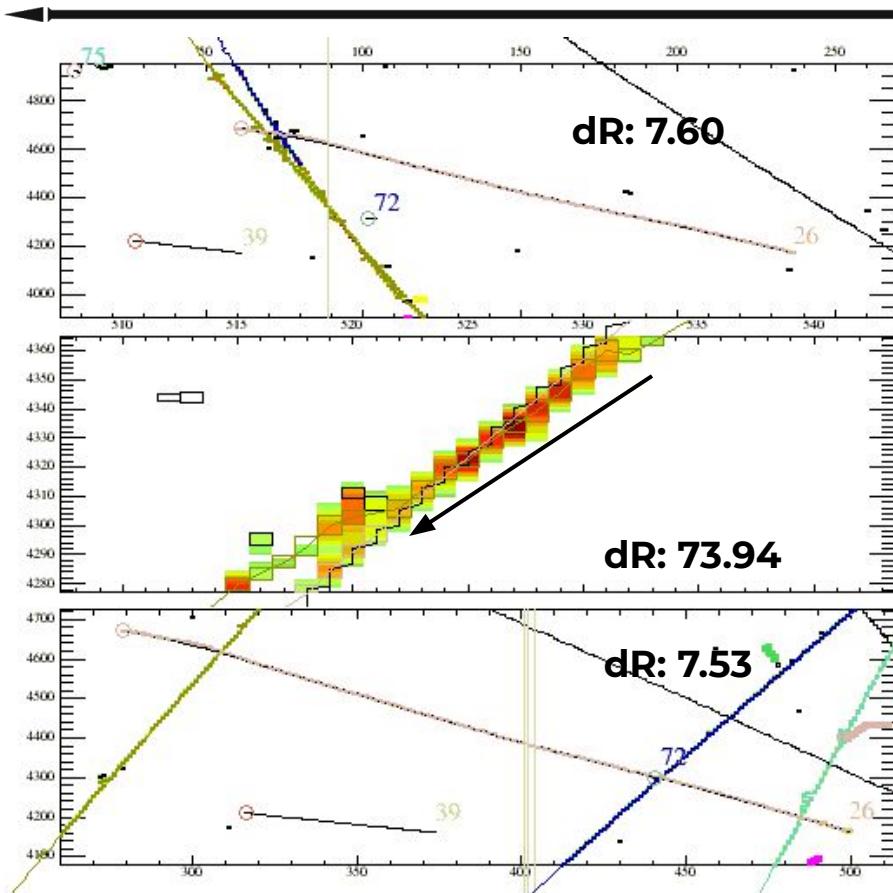
Examples -- Run 22654851, Event 901



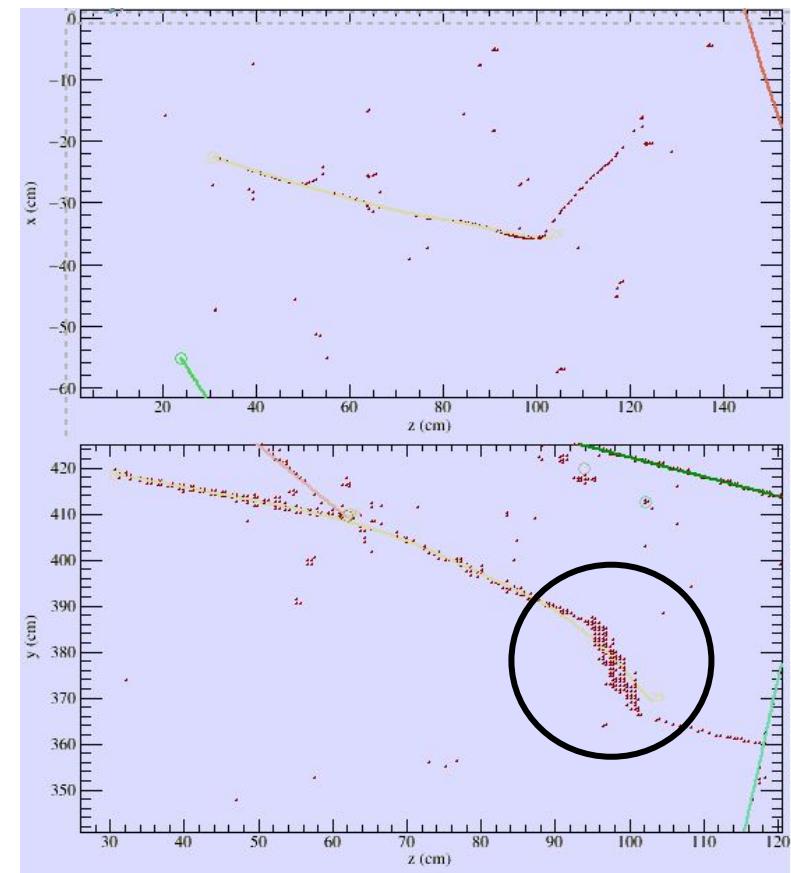
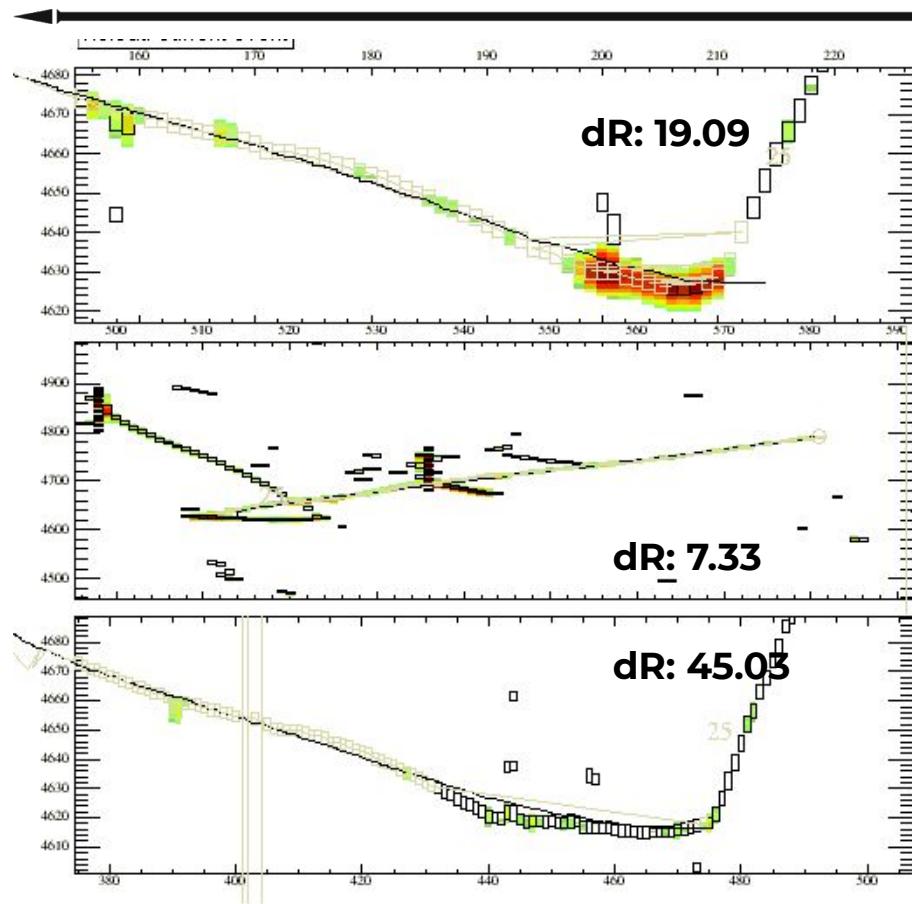
Examples -- Run 22654851, Event 901



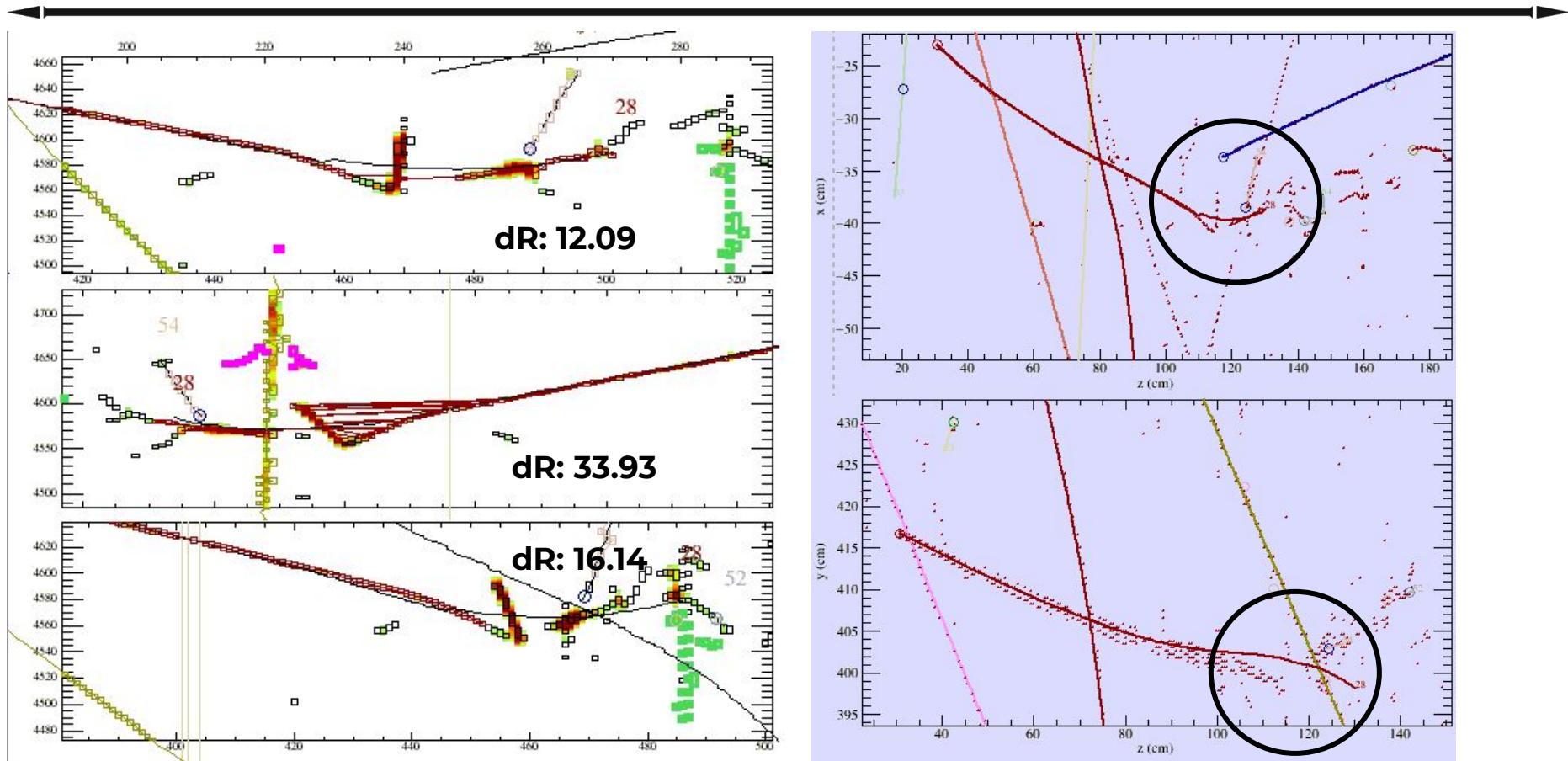
Examples -- Run 22628660, Event 908



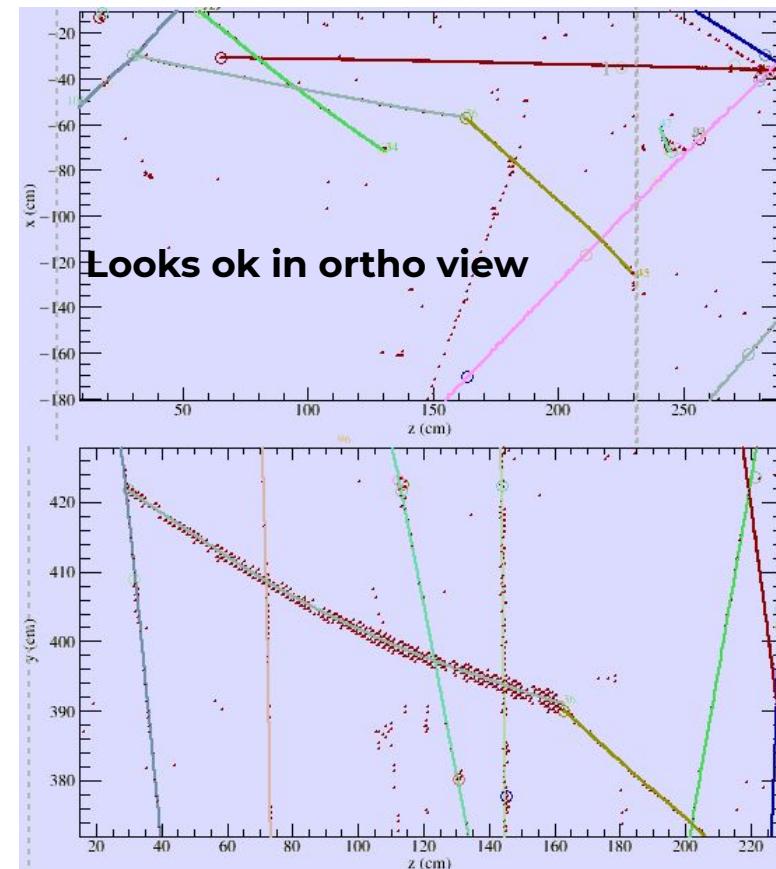
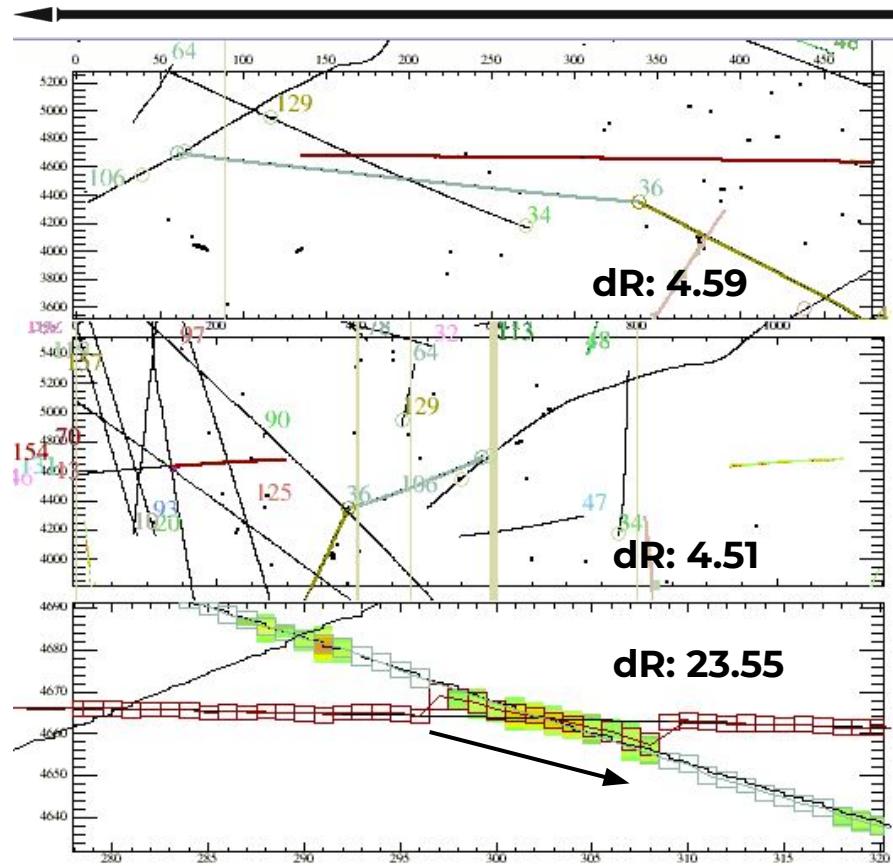
Examples -- Run 23387380, Event 1015



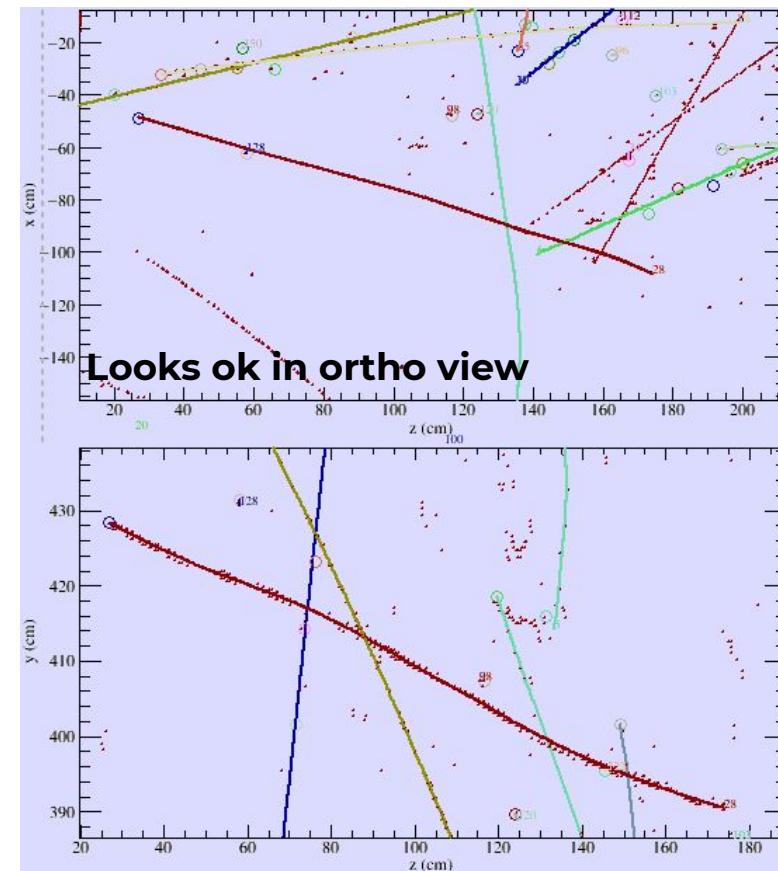
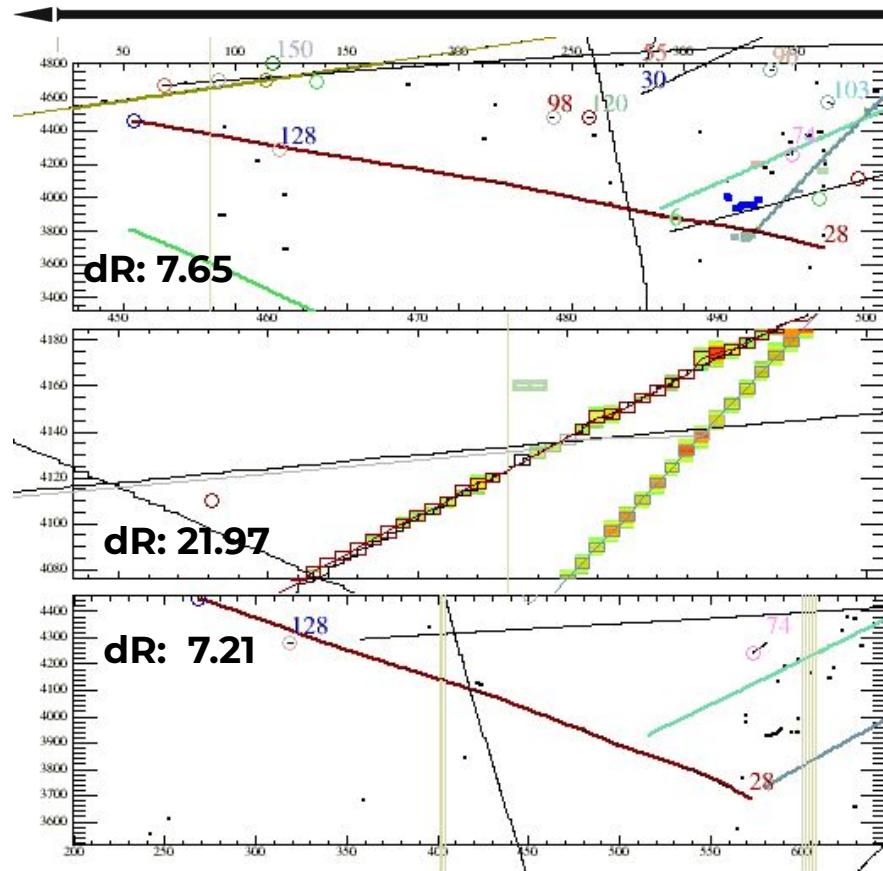
Examples -- Run 23385343, Event 327



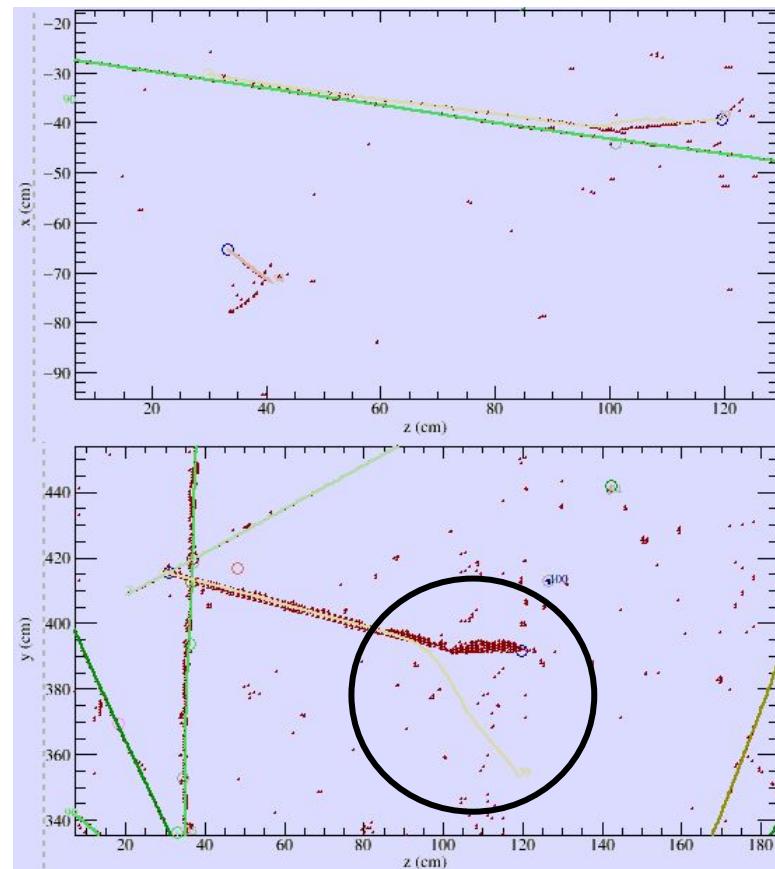
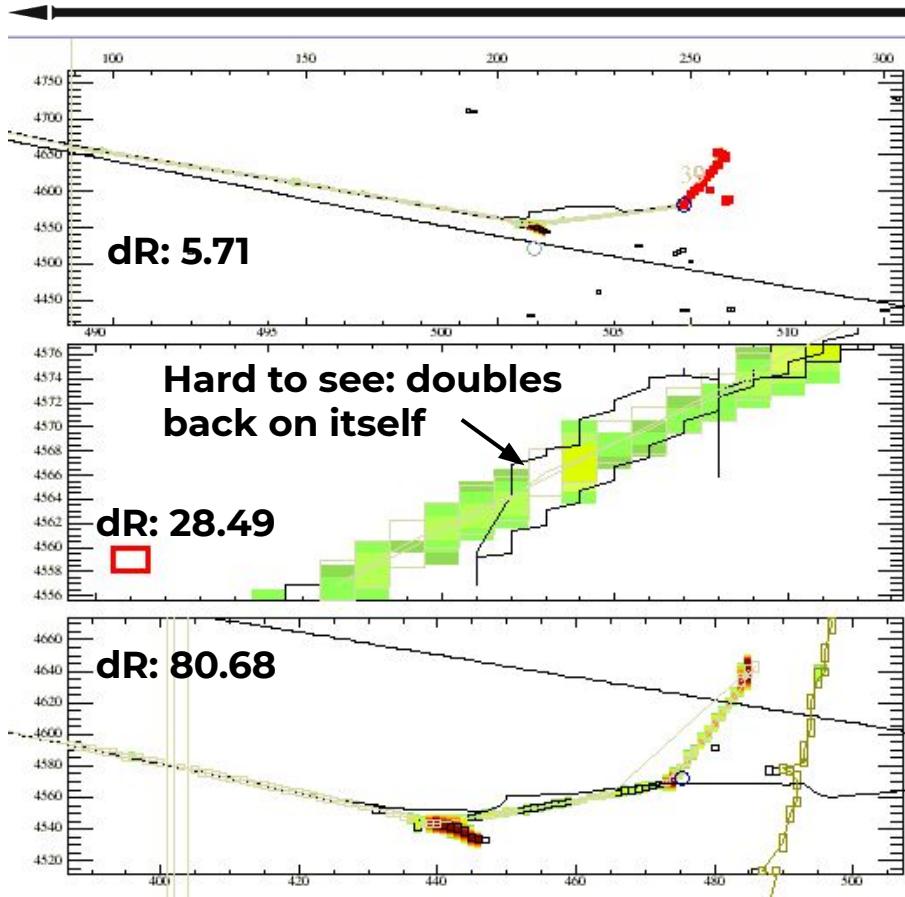
Examples -- Run 22656069, Event 1819



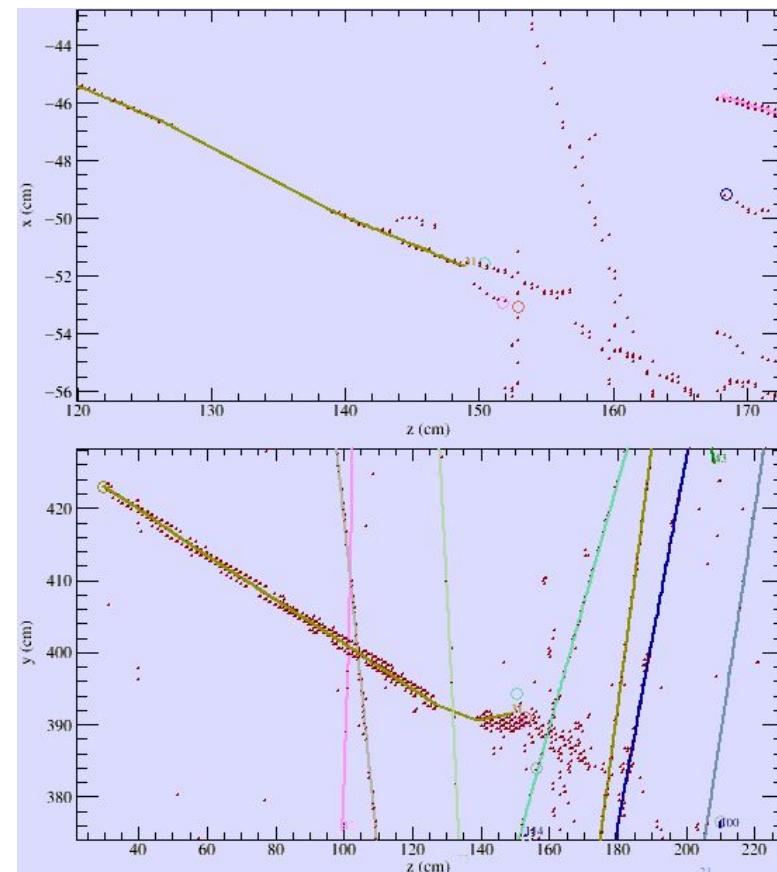
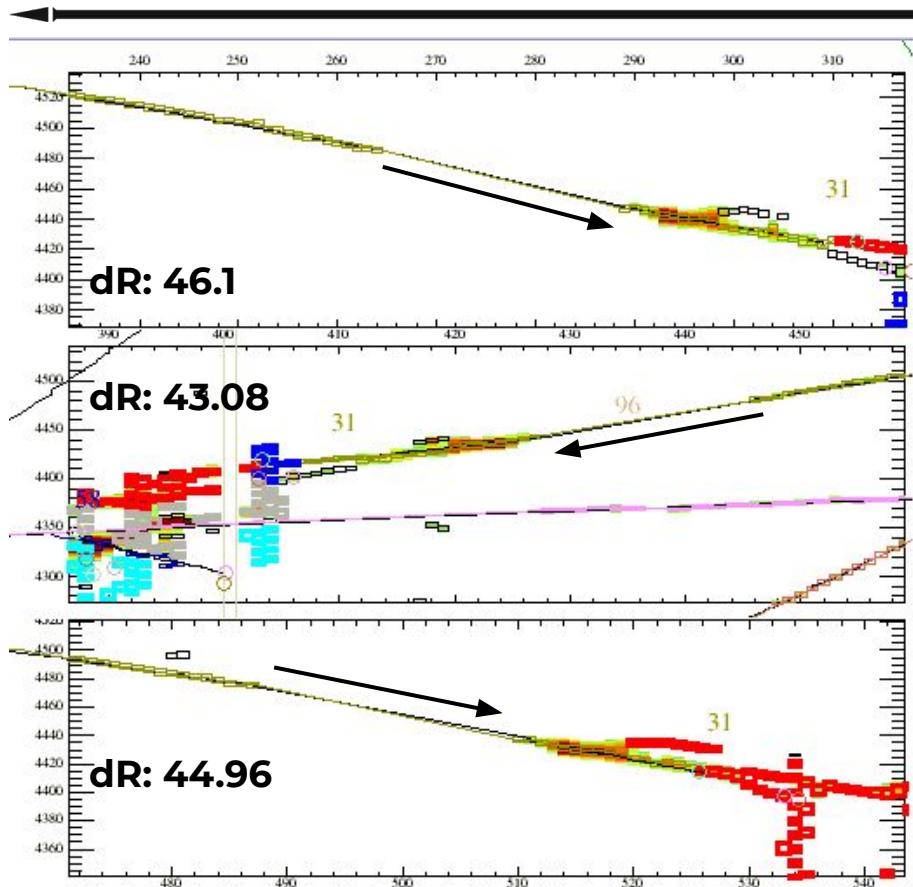
Examples -- Run 22656192, Event 1311



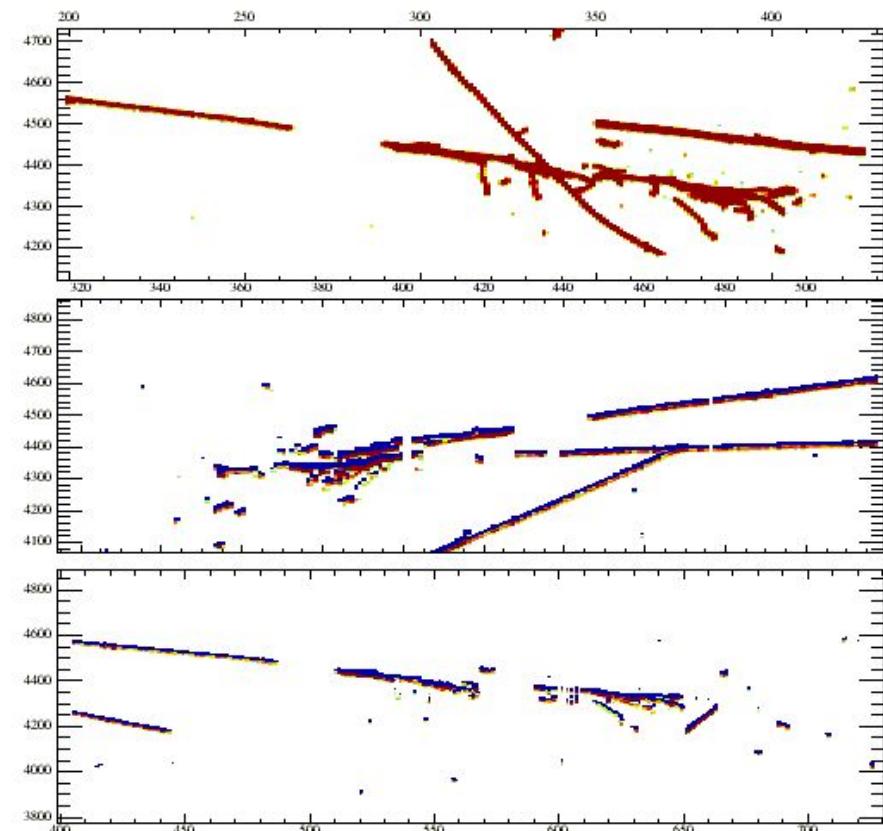
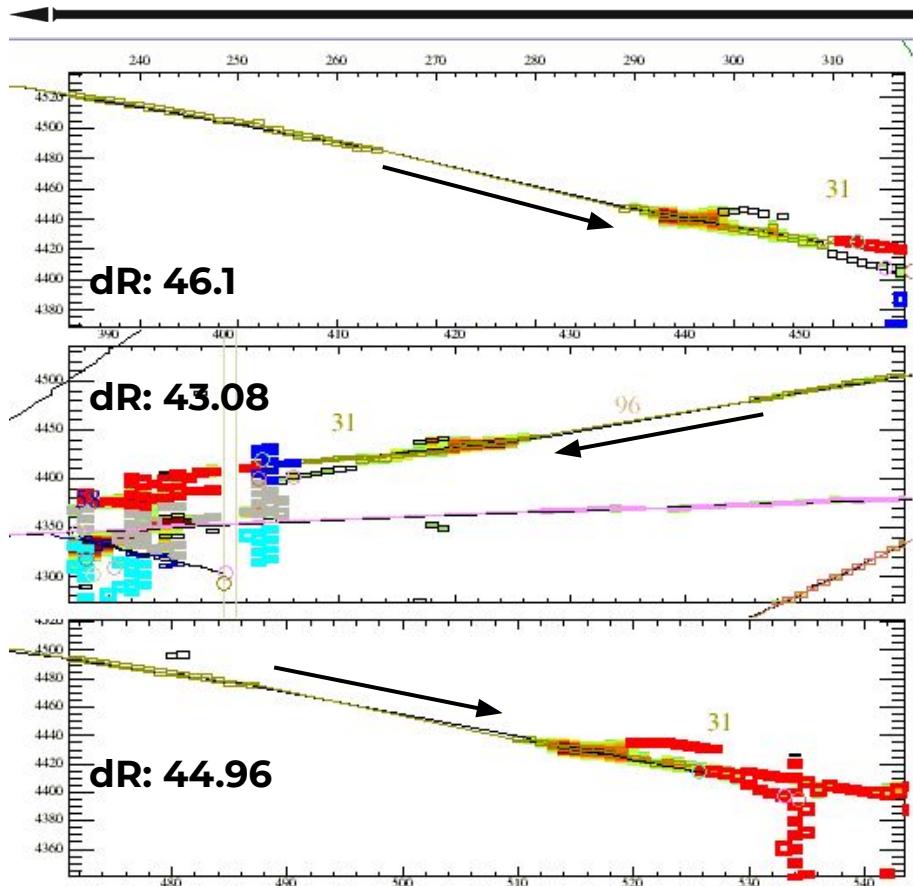
Examples -- Run 23387439, Event 33



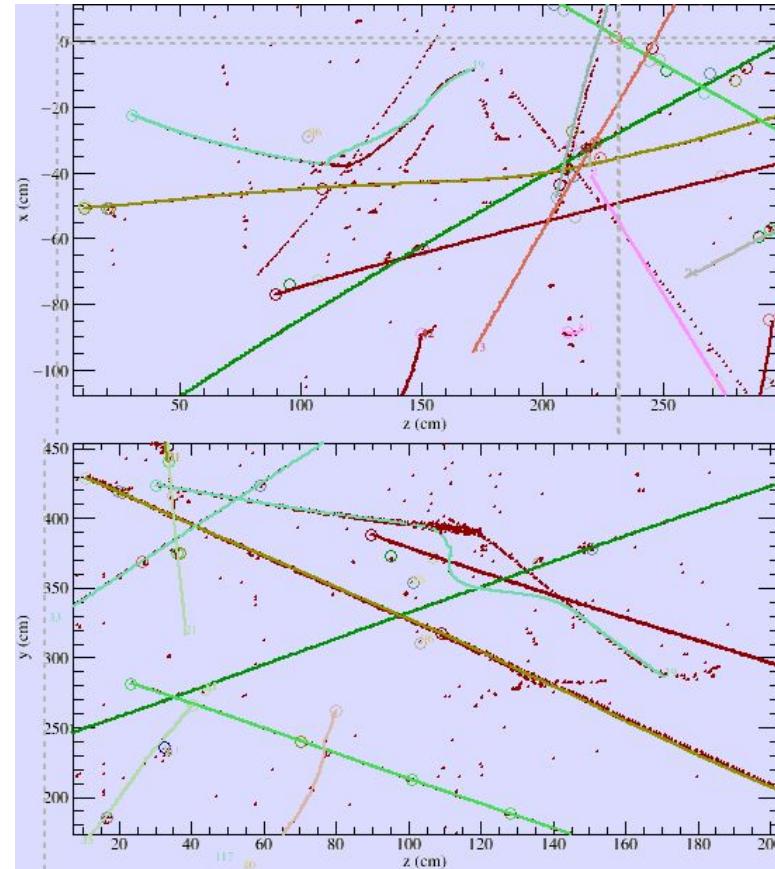
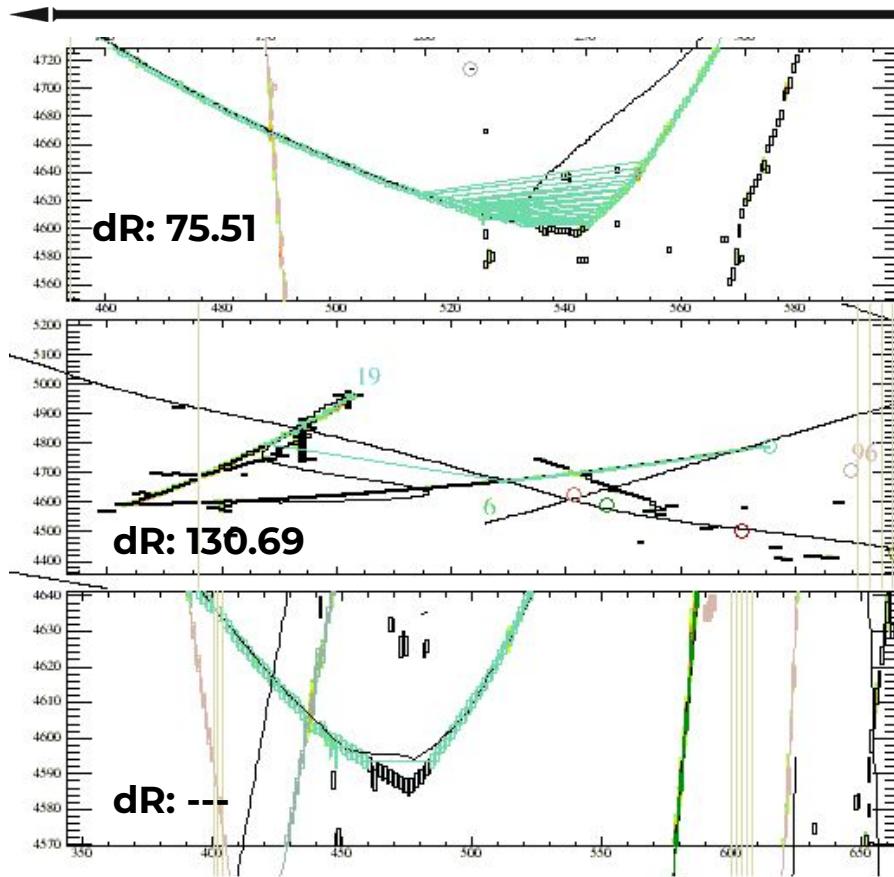
Examples -- Run 22656088, Event 1849



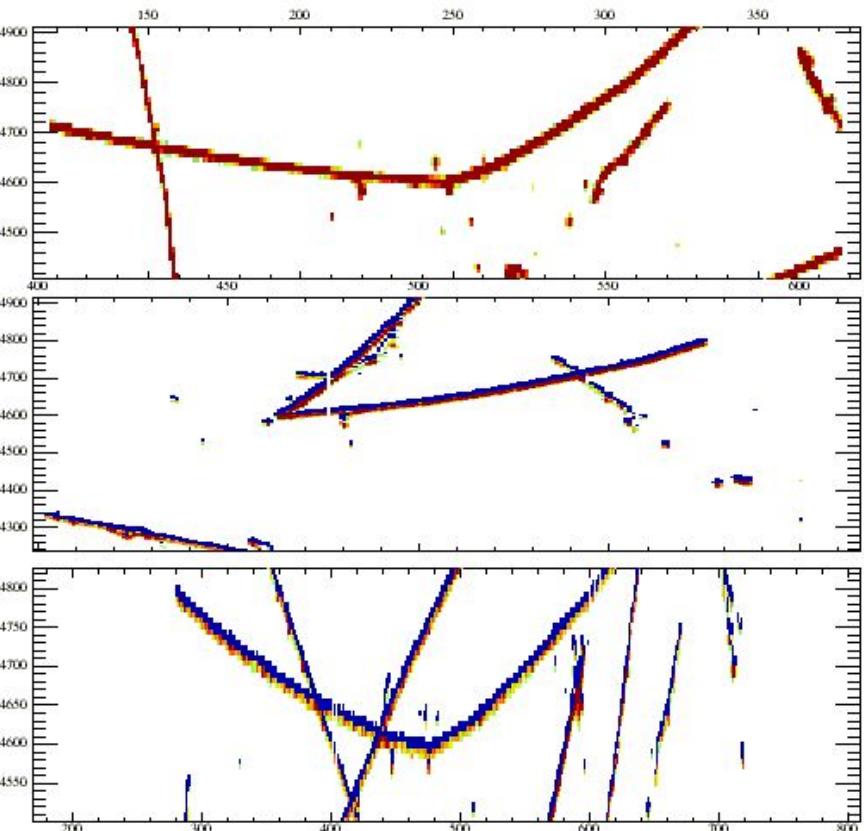
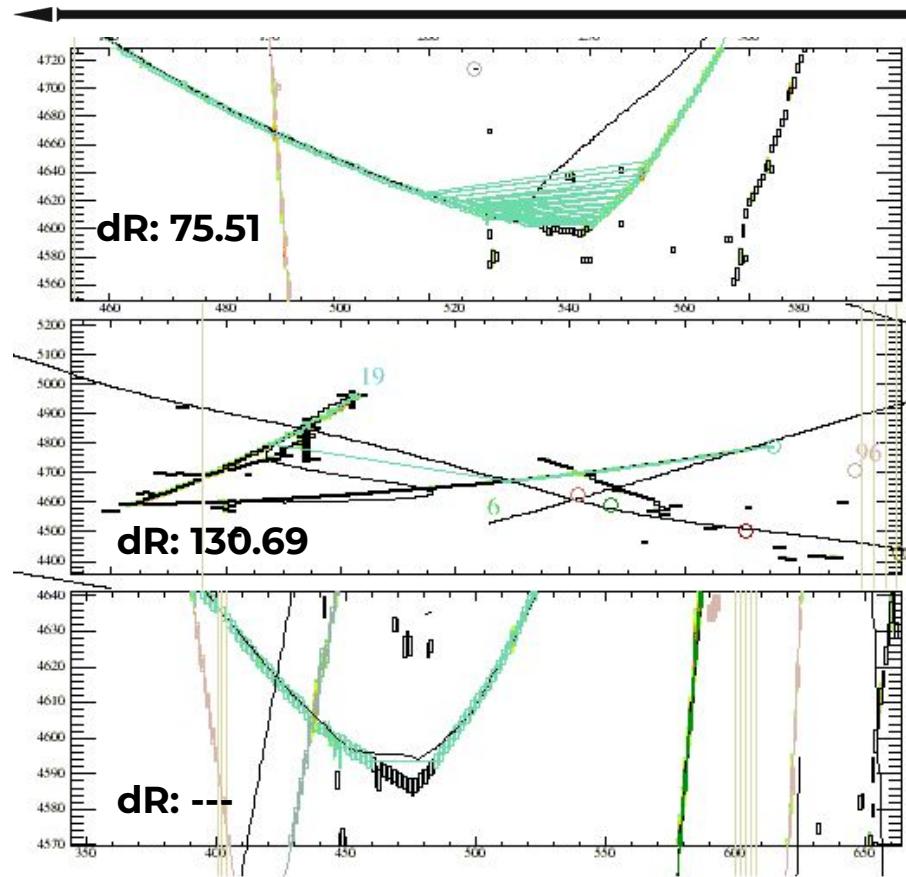
Examples -- Run 22656088, Event 1849



Examples -- Run 22656069, Event 1773

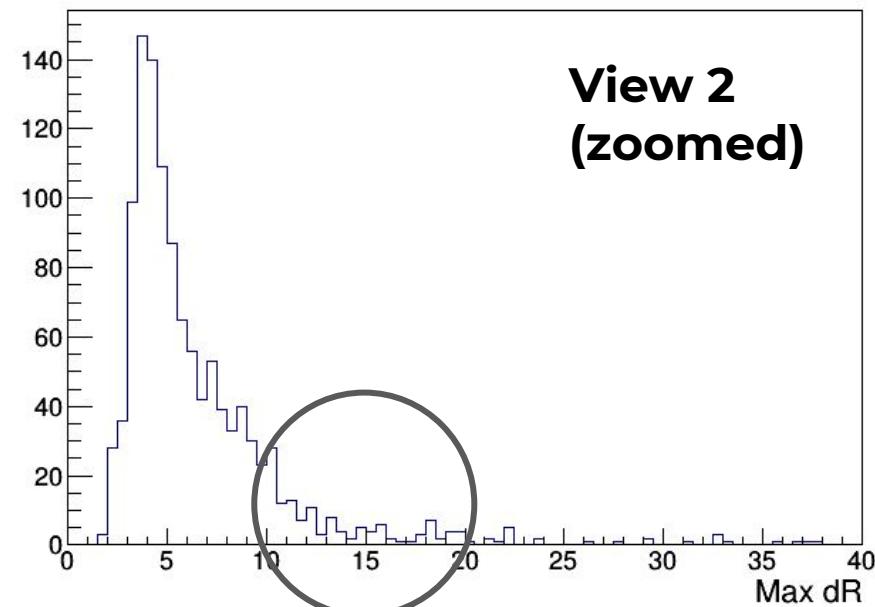
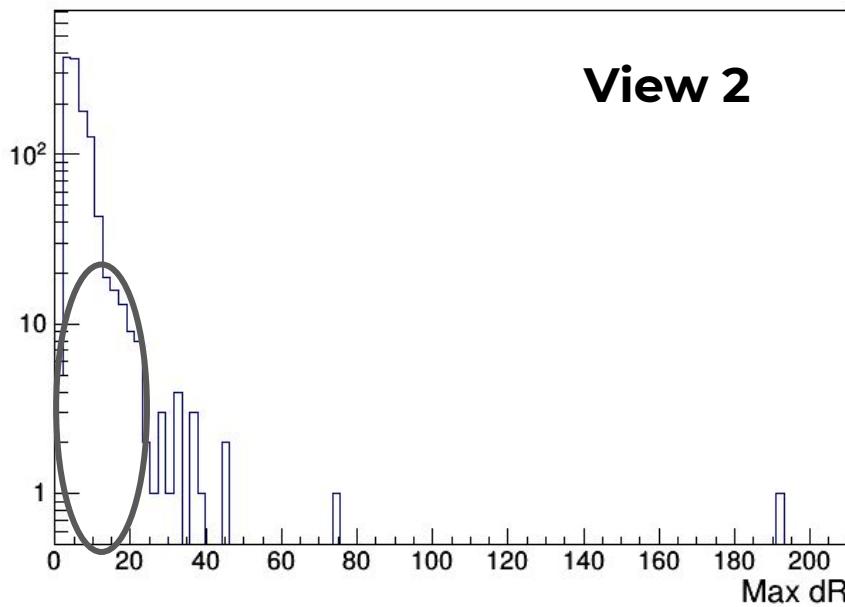


Examples -- Run 22656069, Event 1773

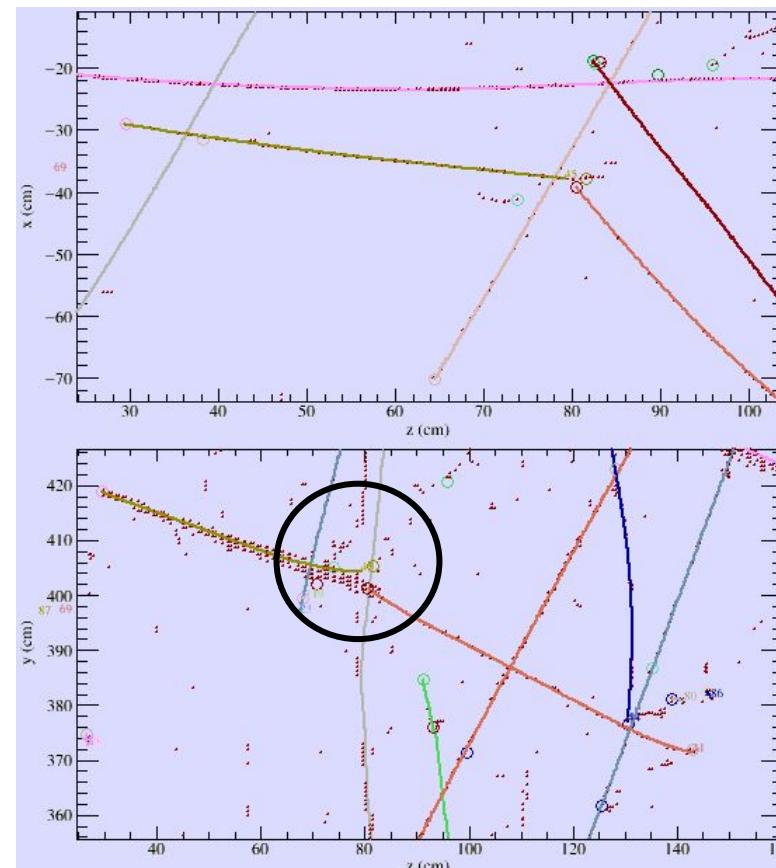
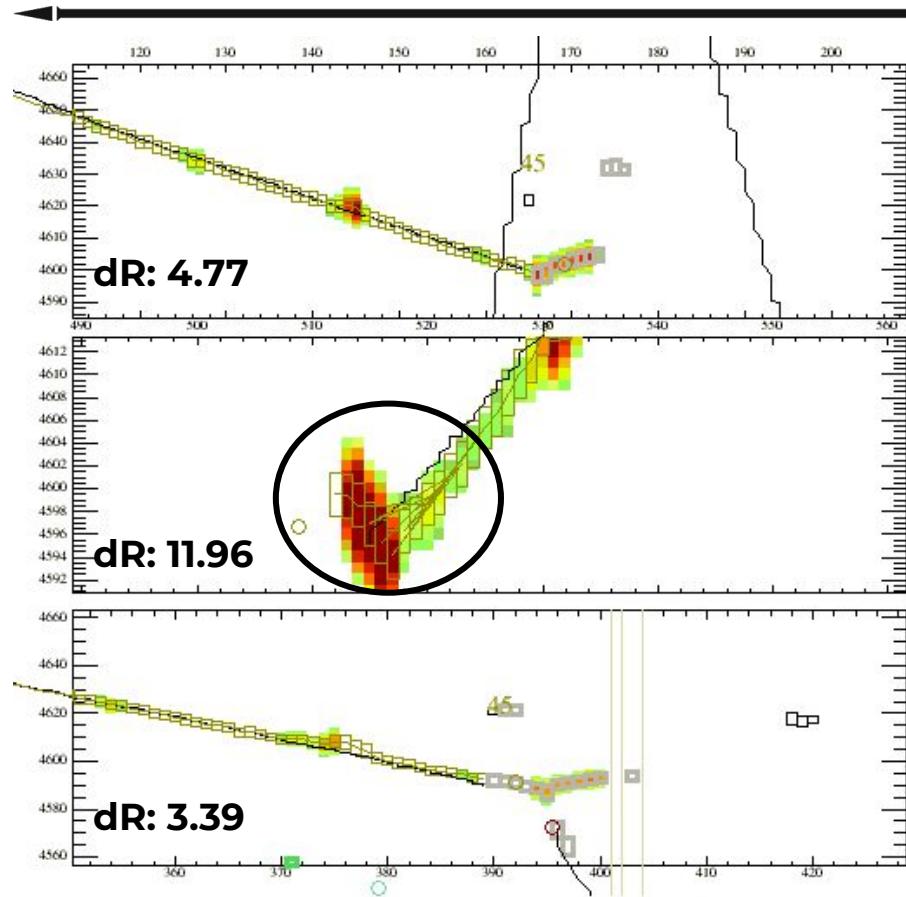


Identifying Metric

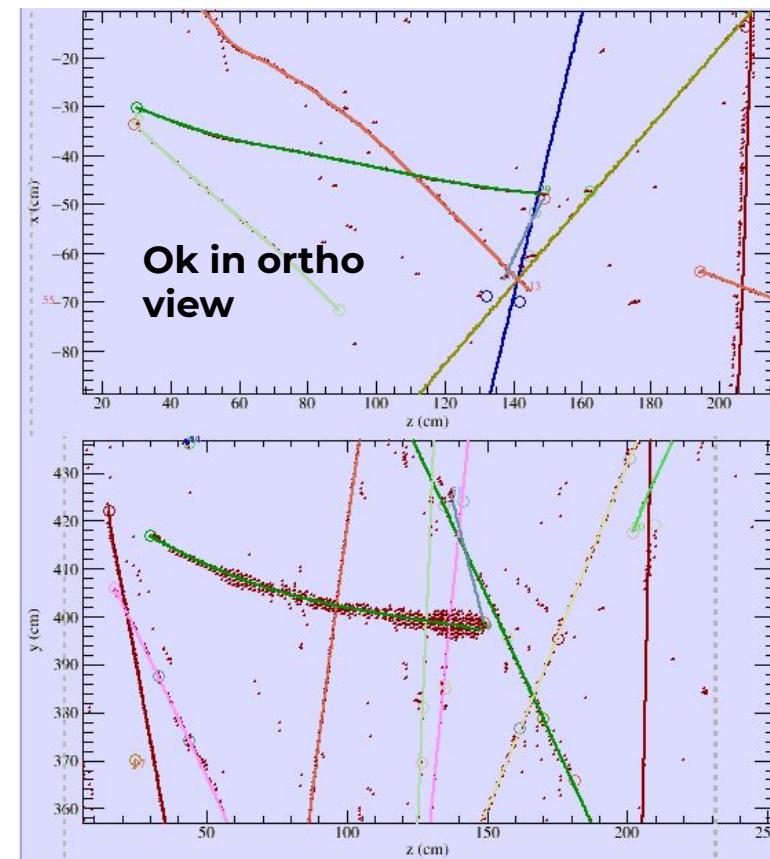
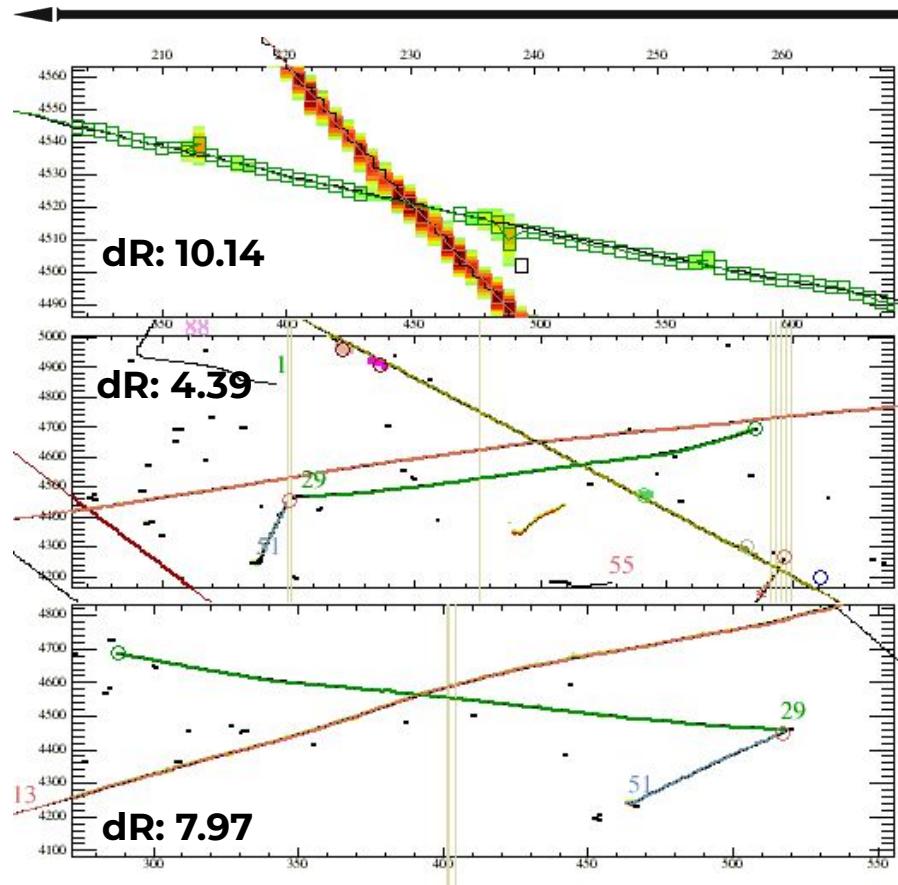
Next slides: $10 < dR < 20$ units in any view



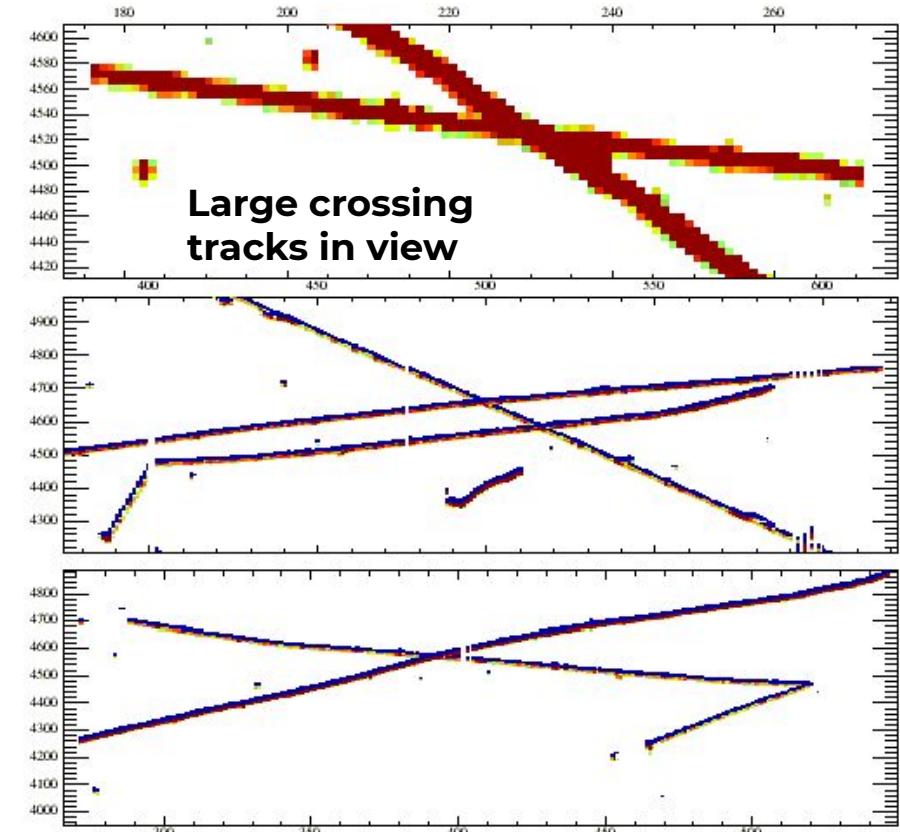
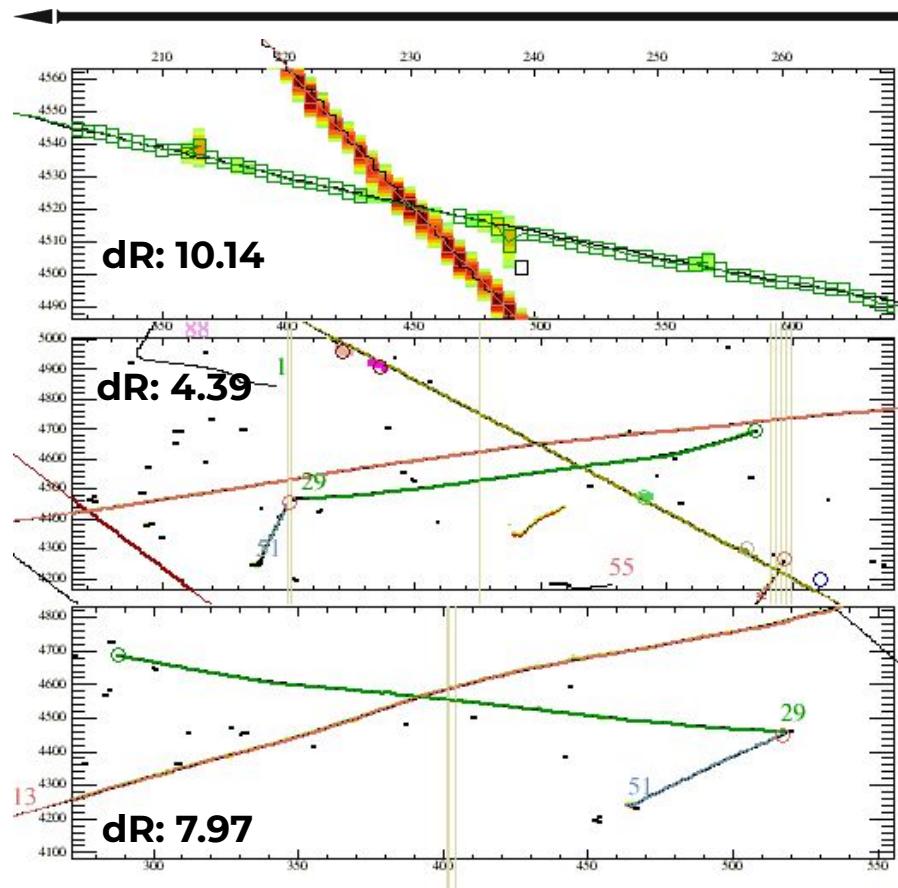
Examples -- Run 22656173, Event 1209



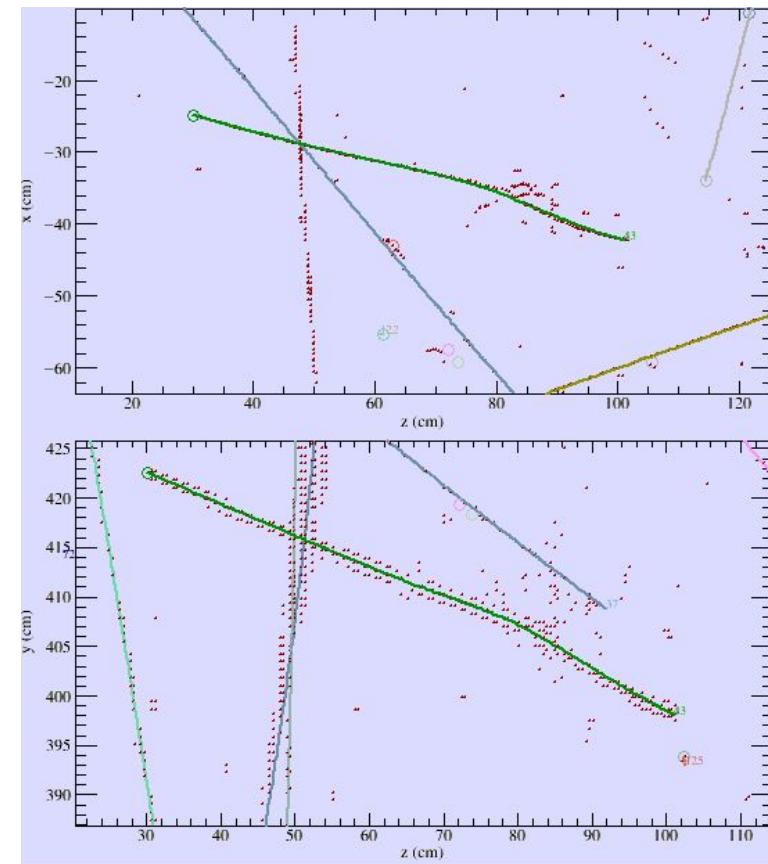
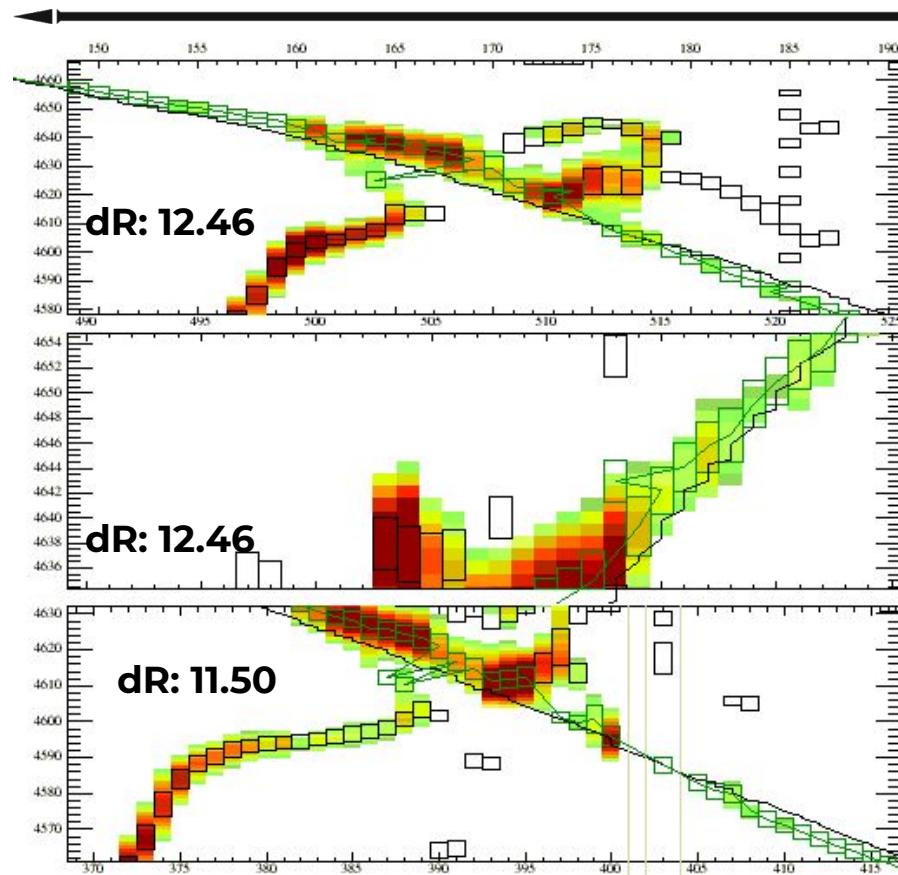
Examples -- Run 22656173, Event 332



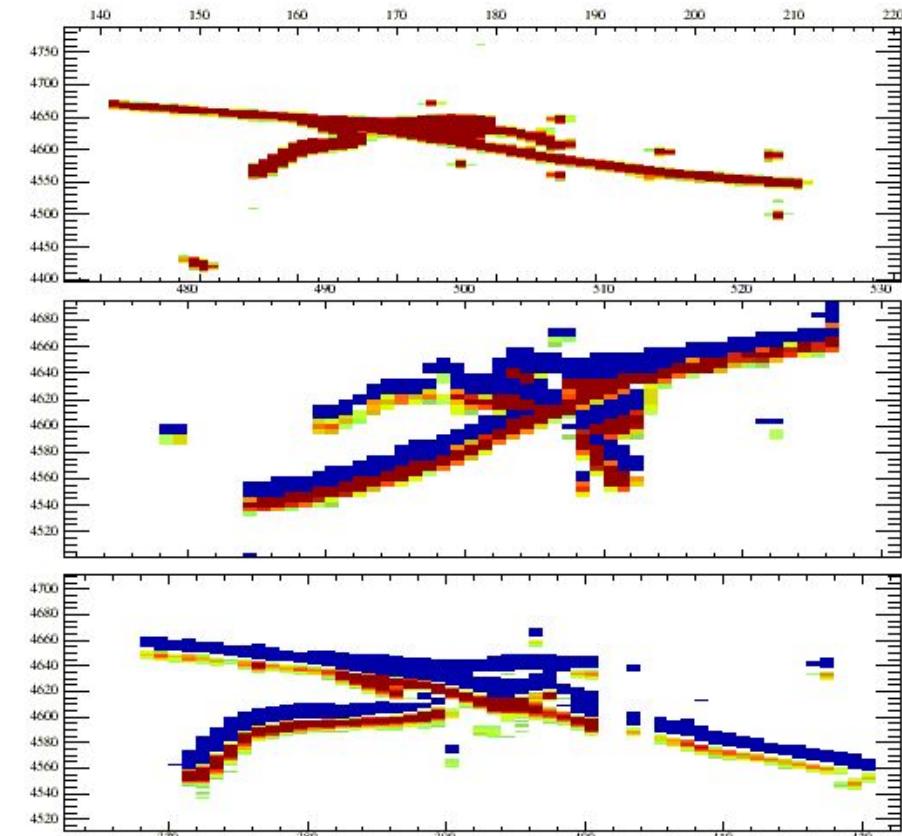
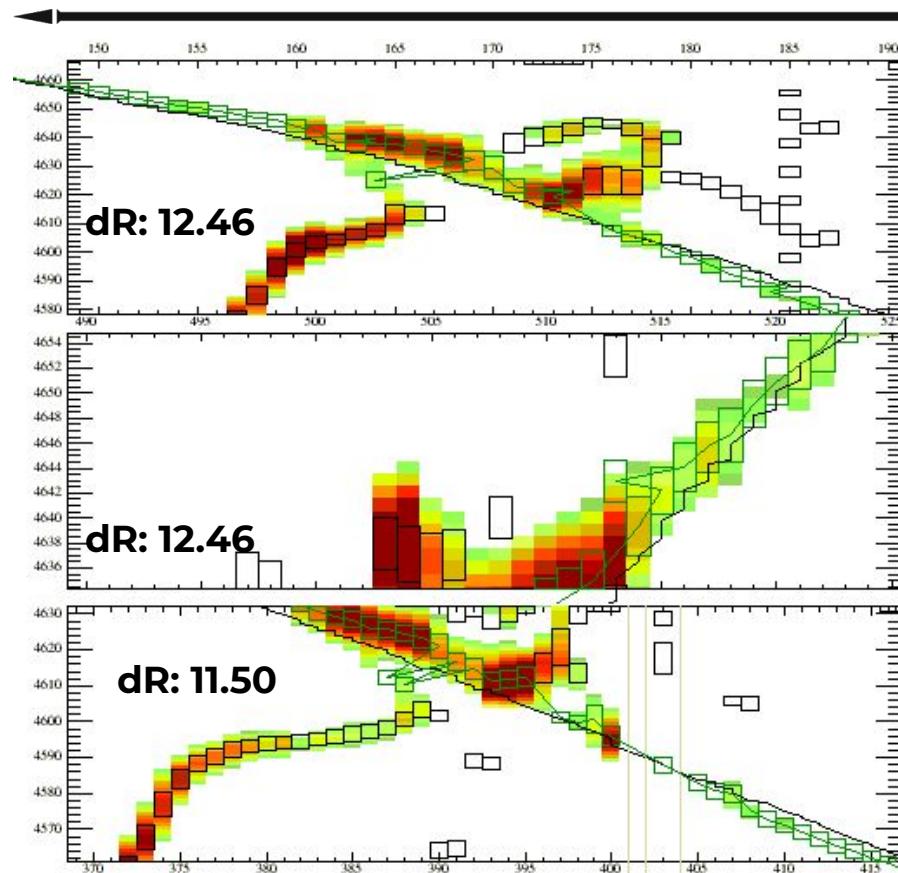
Examples -- Run 22656173, Event 332



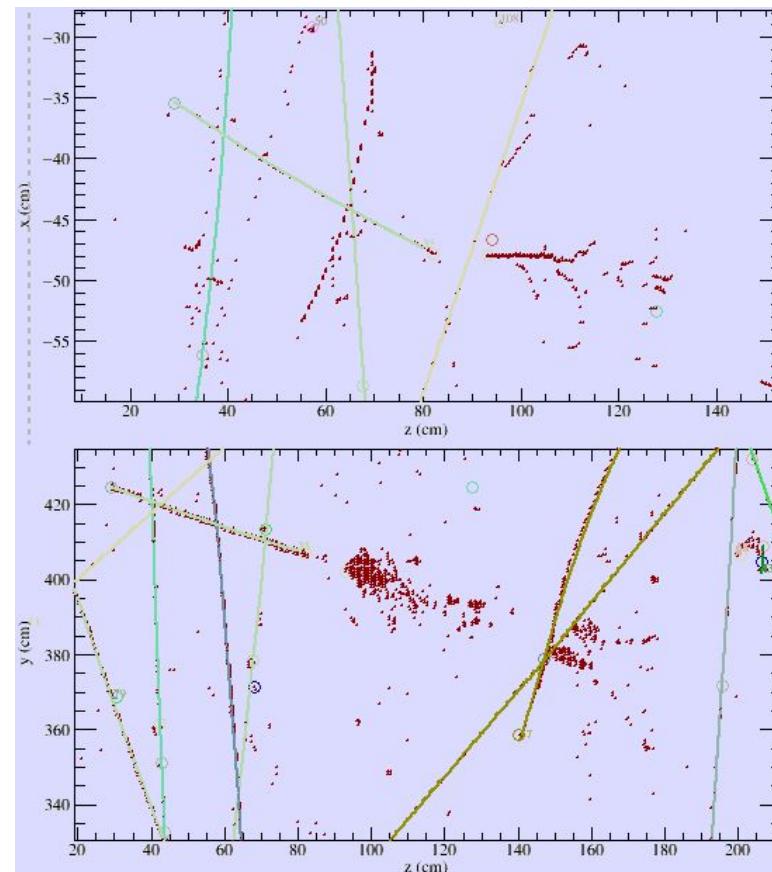
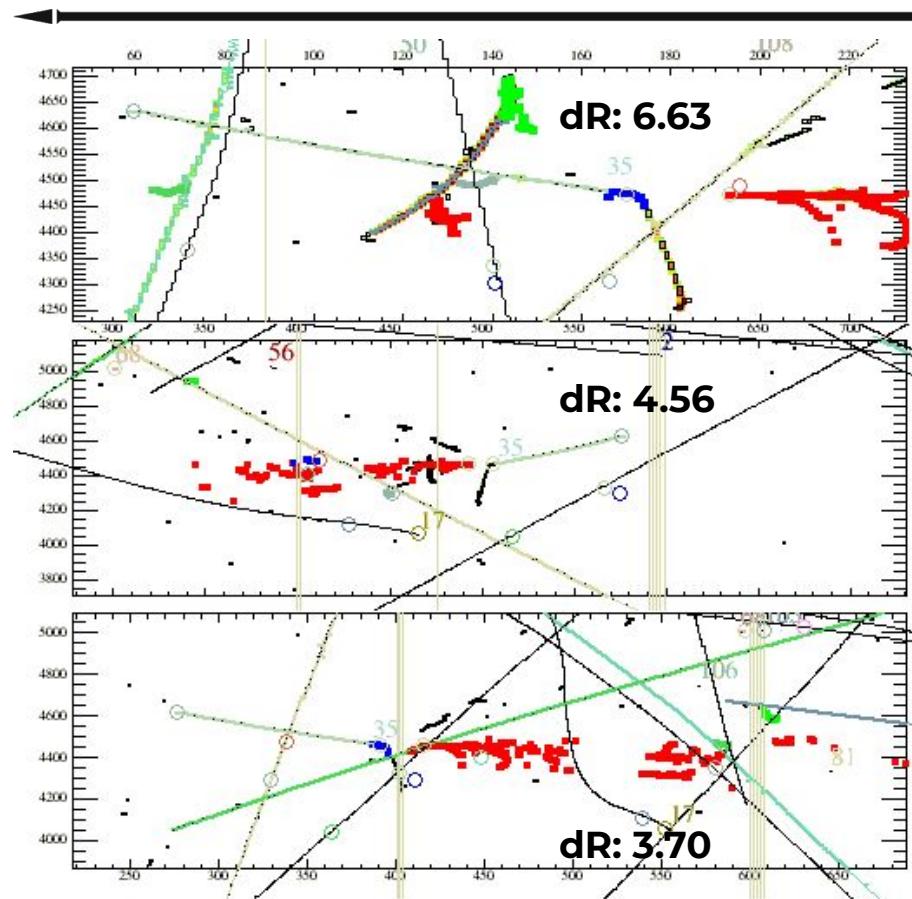
Examples -- Run 22656192, Event 89



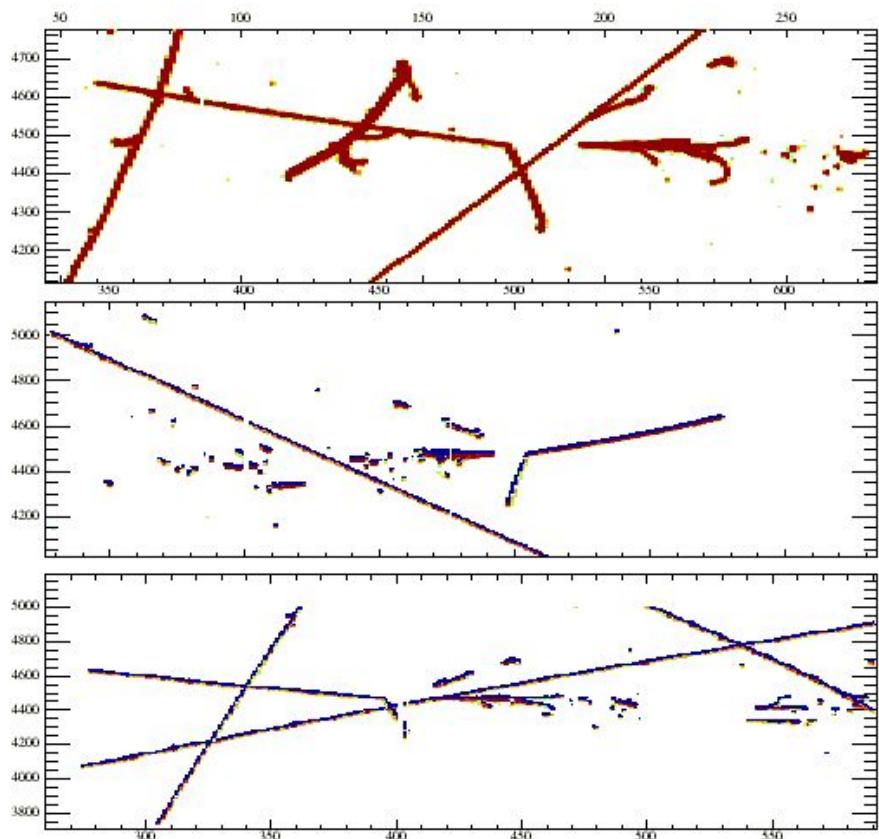
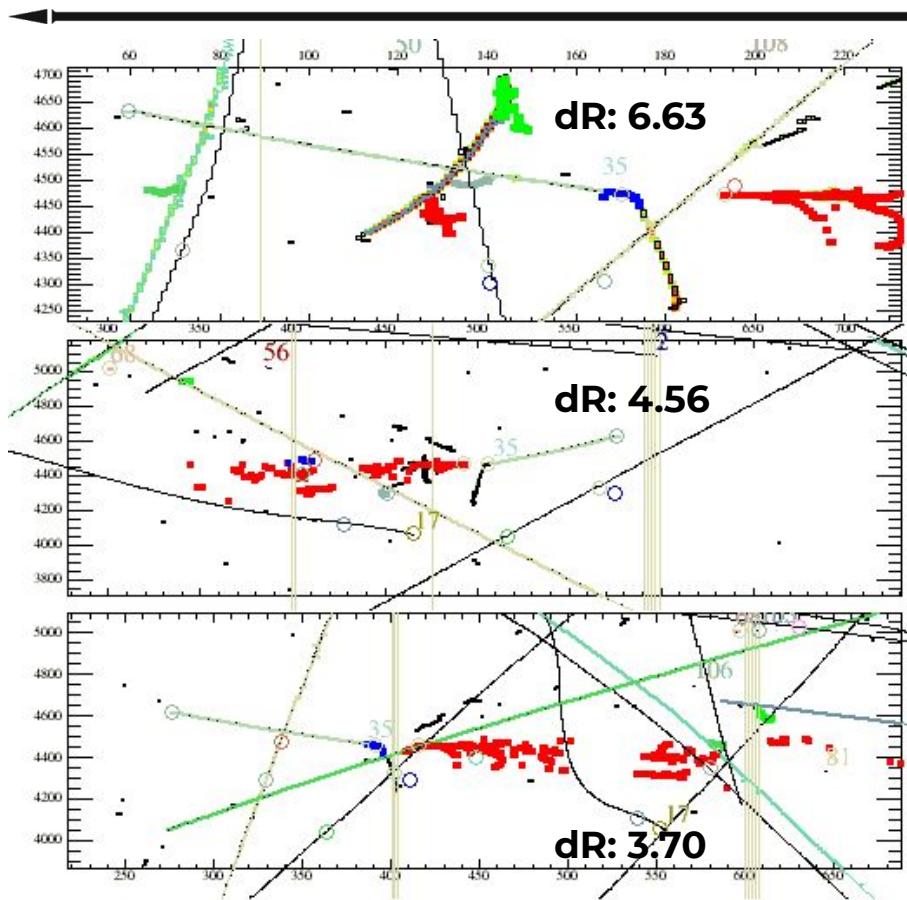
Examples -- Run 22656192, Event 89



Good Event -- Run 22654866, Event 1670



Good Event -- Run 22654866, Event 1670



Pathologies

Misses some hits around a kink (p. 8)

Misses some hits in a relatively straight track (p. 9)

Another track crosses in a view (p. 12)

Tracking is ‘whacked-out’ by hard kinks (p. 18) and showers (p. 15/16)

- Sometimes the gaps between hits are relatively small (p. 20) → need more-refined metric for identifying?

Conclusions

Reconstruction errors sometimes arise for beam tracks as shown

Looking at the separation in wires/ticks between hits can help pick these out(put in a filter?)

Need to treat different behaviors with care

- Should we just accept the tracks small, straight gaps?
- Throw out the drastically bad tracks

To do:

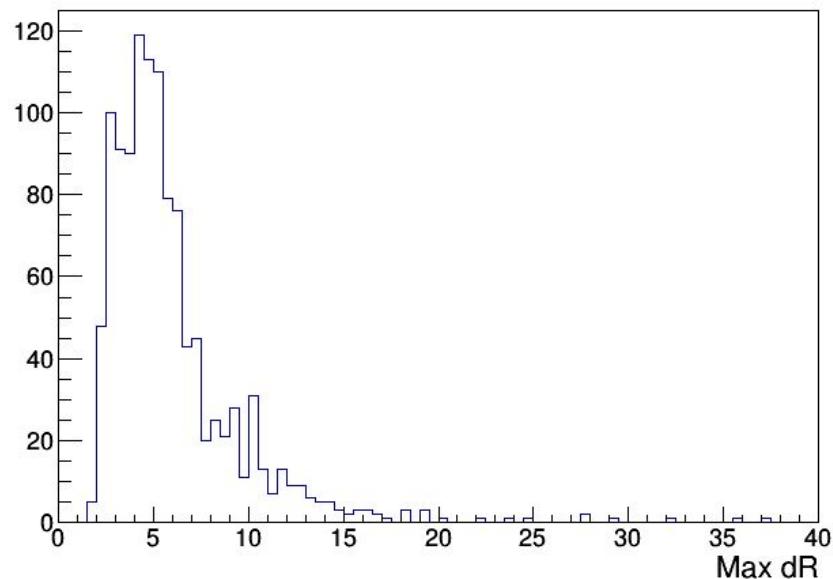
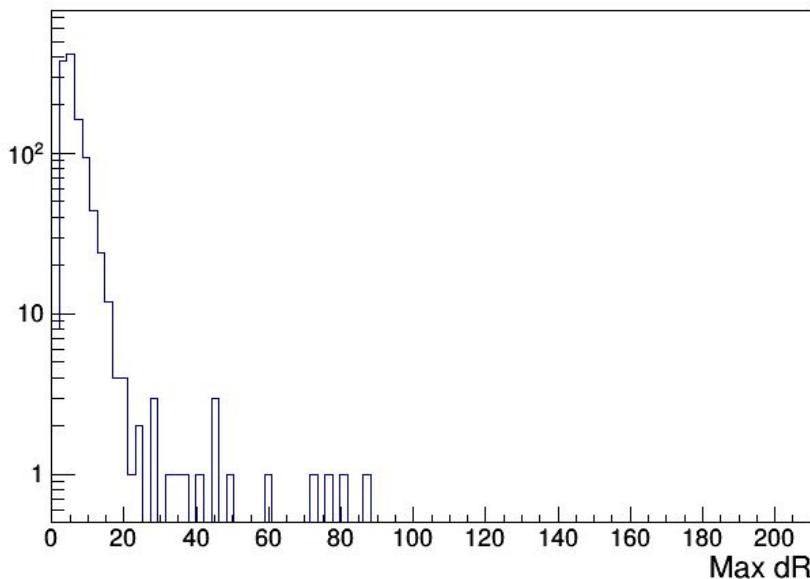
- Need to determine if errors couple to interaction types → Could introduce model dependence when accounting for this in data



Backup Slides



Identifying Metric - View 0



Identifying Metric - View 1

