



Track Matching – The Cone Approach

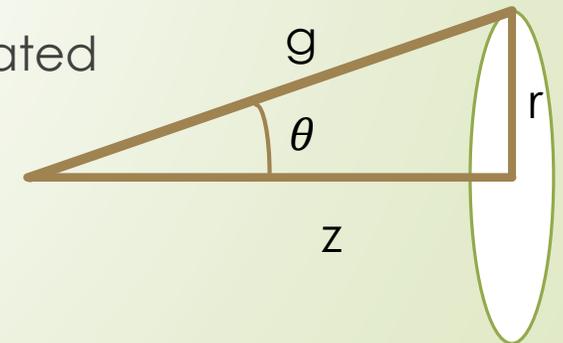
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The Cone Approach

- ▶ For this analysis, we used the following method:
 - ▶ Using the `Idp::WCTrack::XYFace()` method, we get the projection of the (x,y) of the Wire Chamber (WC) coordinate in the upstream face of the LArTPC;
 - ▶ Using the `recob::Track::Extent()` method we get the beginning of the tracks inside the LArTPC;

The Cone Approach

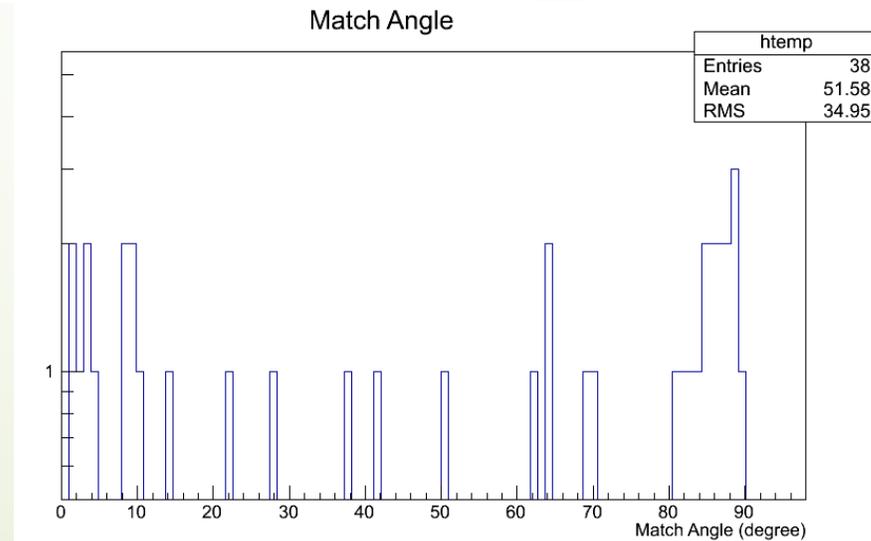
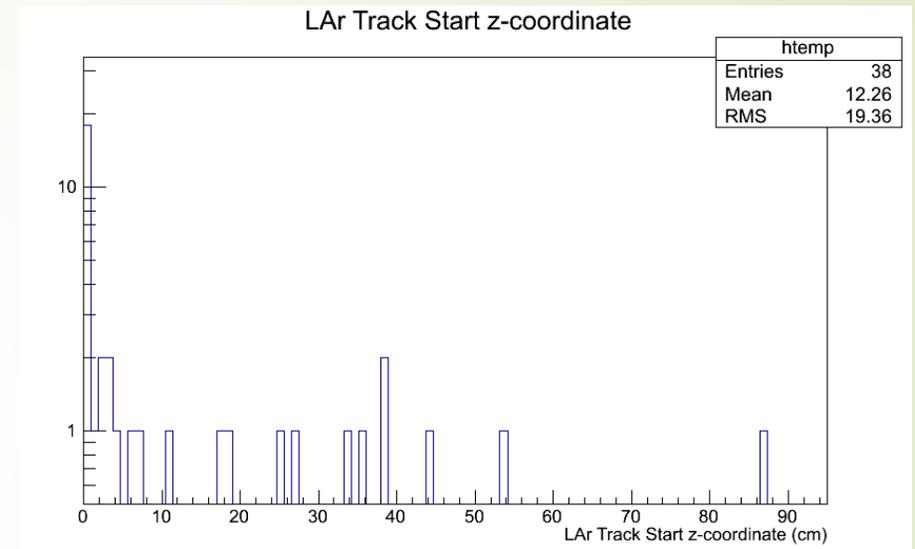
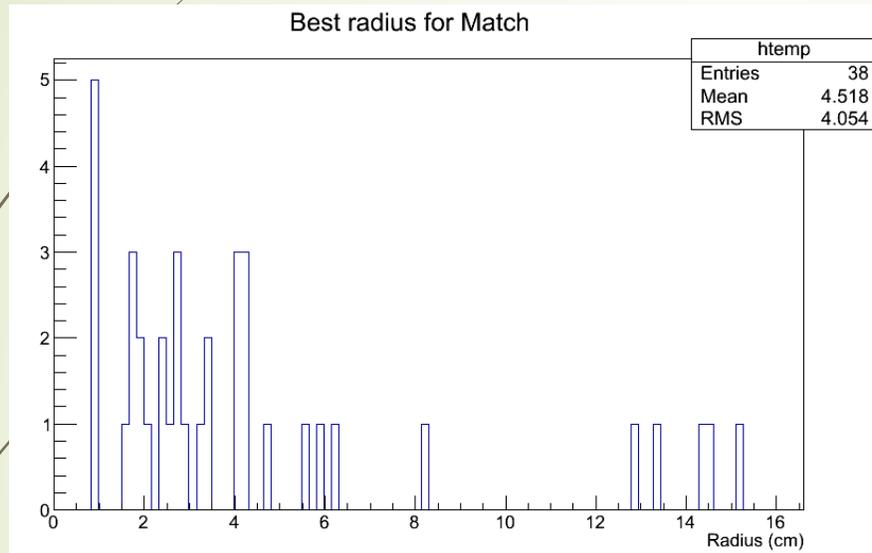
- ▶ For this analysis, we used the following method:
 - ▶ We project a cone inside the TPC, where the height is the z-coordinate of start point of the LAr track;
 - ▶ The generatrix (g) is calculated using the (x,y) projected point of the WC and the start point of the LAr Track;
 - ▶ Finally, we calculate the angle between g and z and use this to calculate the radius of the cone base.
 - ▶ The algorithm is in the `WCTPCTM_module.cc` located at `$MRB_SOURCE/lariatsoft/LArIATRecoModule/`



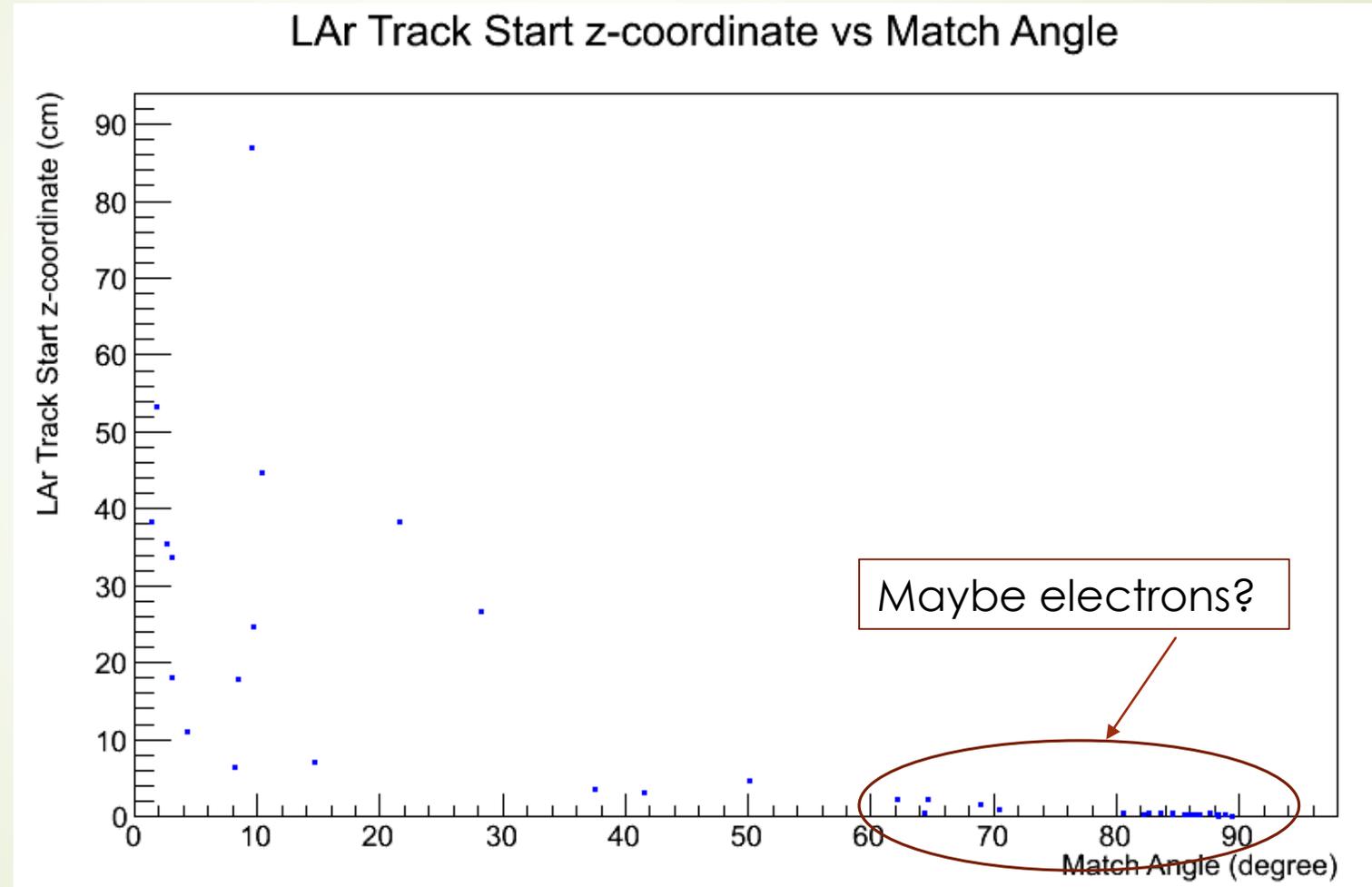
Procedure to get the data

- Ran the SlicerInput.fcl over the run
`/pnfs/lariat/raw/000/980/lariat_r006772_sr0002.root`
- Ran the TriggerPattern Fhicl file (Thanks Jonathan!) over the slicer input, then did the reconstruction with the Reco.fcl to get the `recob::Track` data products;
- Ran the `beamline_fullreco_lariat.fcl` over the reconstructed output to get the `ldp::WCTrack` data products, originating the Full Reconstructed output file;
- At last, ran the track matching fhicl file, resulting in 38 matching tracks events.

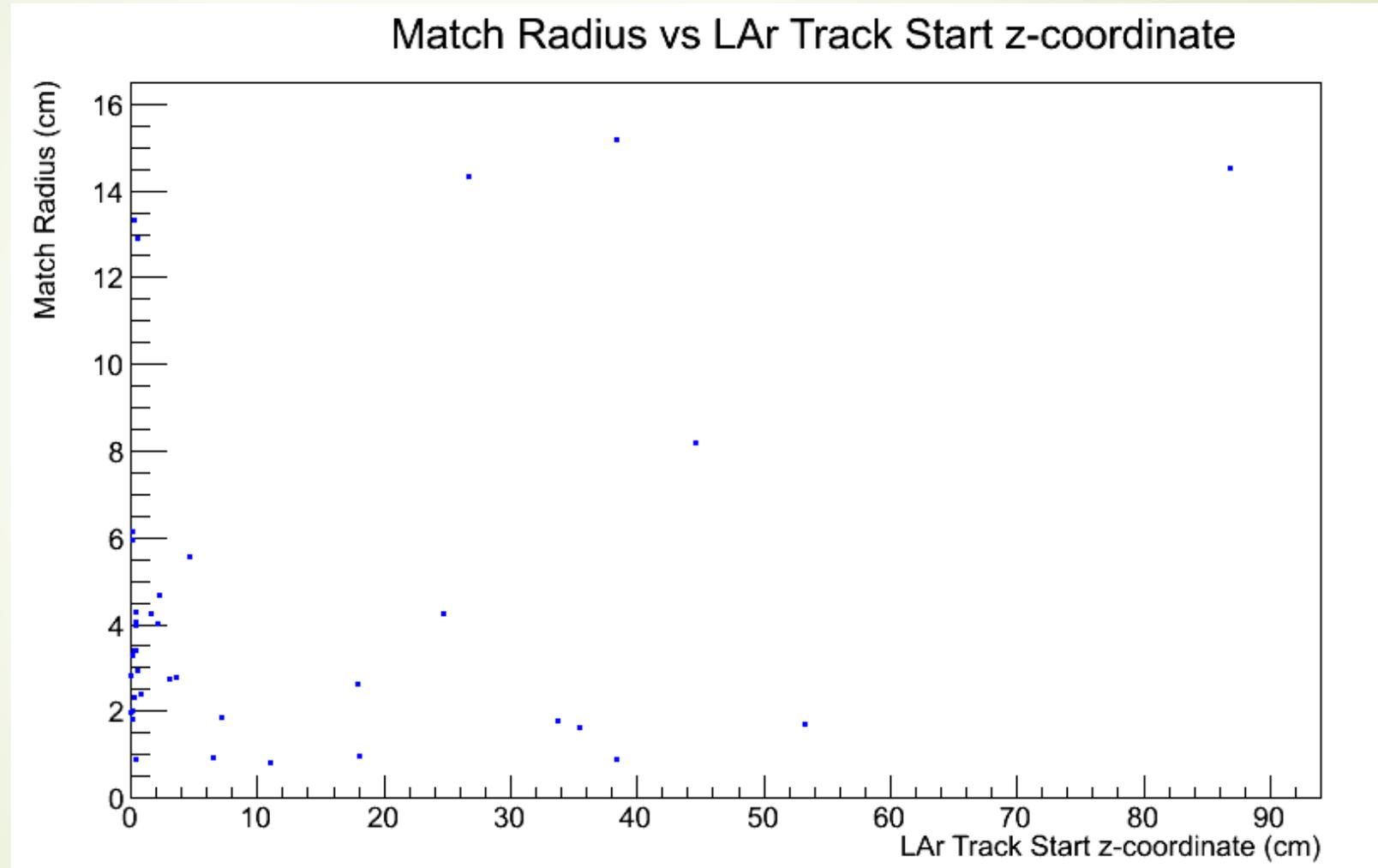
Results



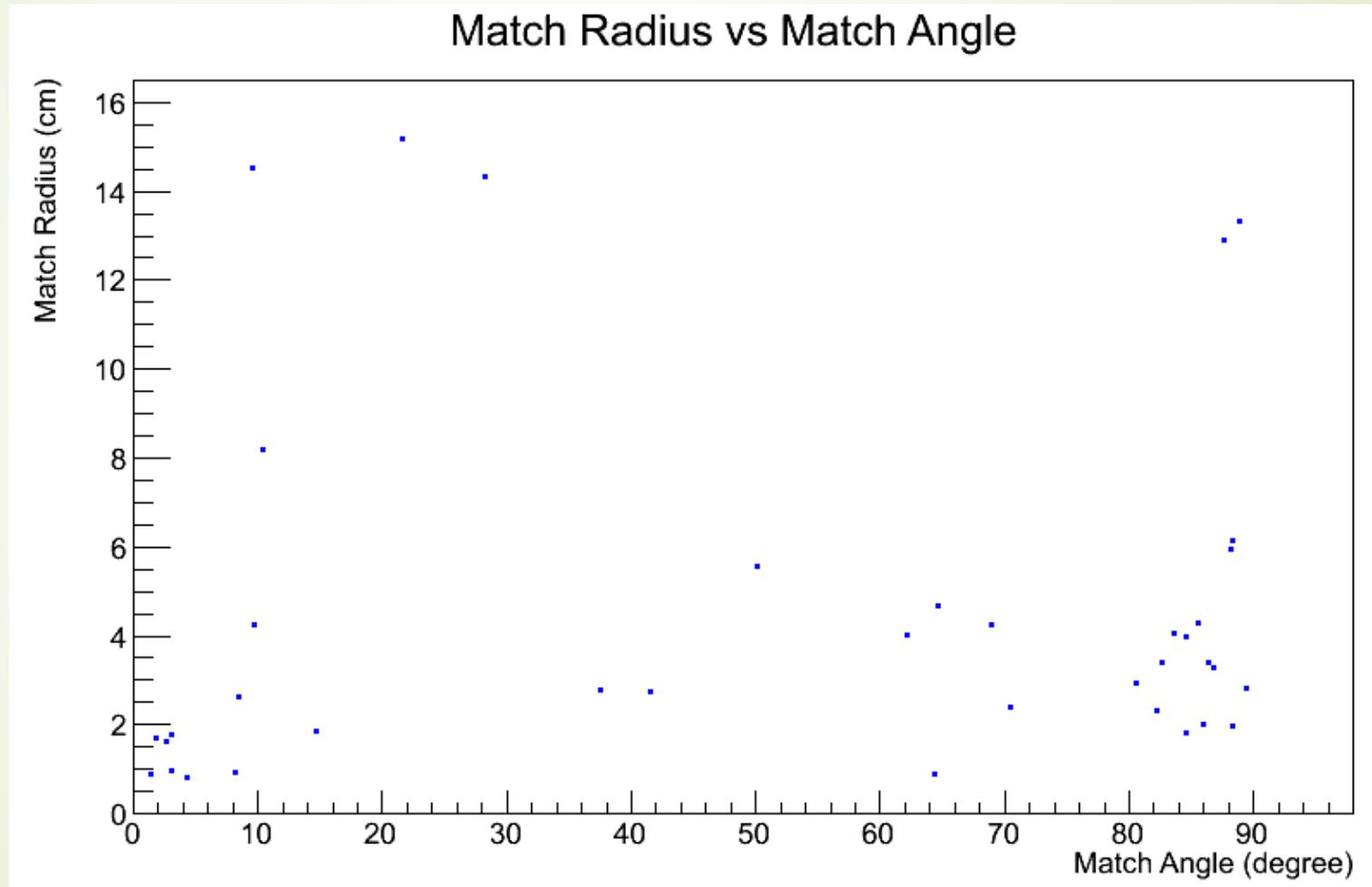
Results



Results



Results



Conclusions

- ▶ We need more statistics → We are going to use other runs;
 - ▶ Suggestions for specific runs?
- ▶ Raw visualization tool for debugging;
- ▶ If this method is reasonable
 - ▶ Criterium for the minimum match radius;
 - ▶ More statistics will enable additional cuts;