

First look at PDVD “pureAr” pre-production

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ProtoDUNE-VD

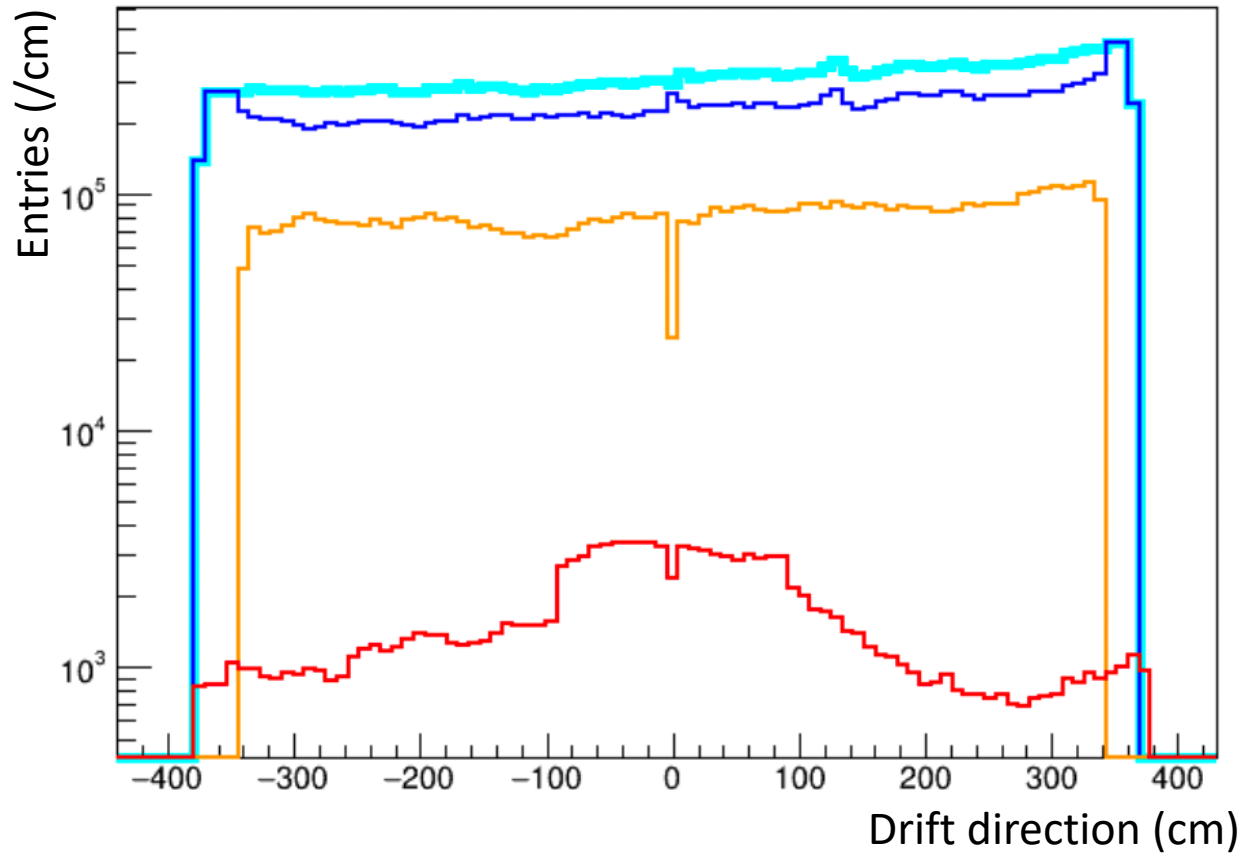
June 14th, 2024

Some numbers

- 1150 files
- 11500 events fully reconstructed
- 294951 tracks reconstructed within [50-800] cm length
- 5596 tracks longer than 650 cm

- More information by Elisabetta here:
https://indico.in2p3.fr/event/32529/contributions/139222/attachments/85280/127613/MCstatus_dunefrance_EP0506.pdf

Energy depositions

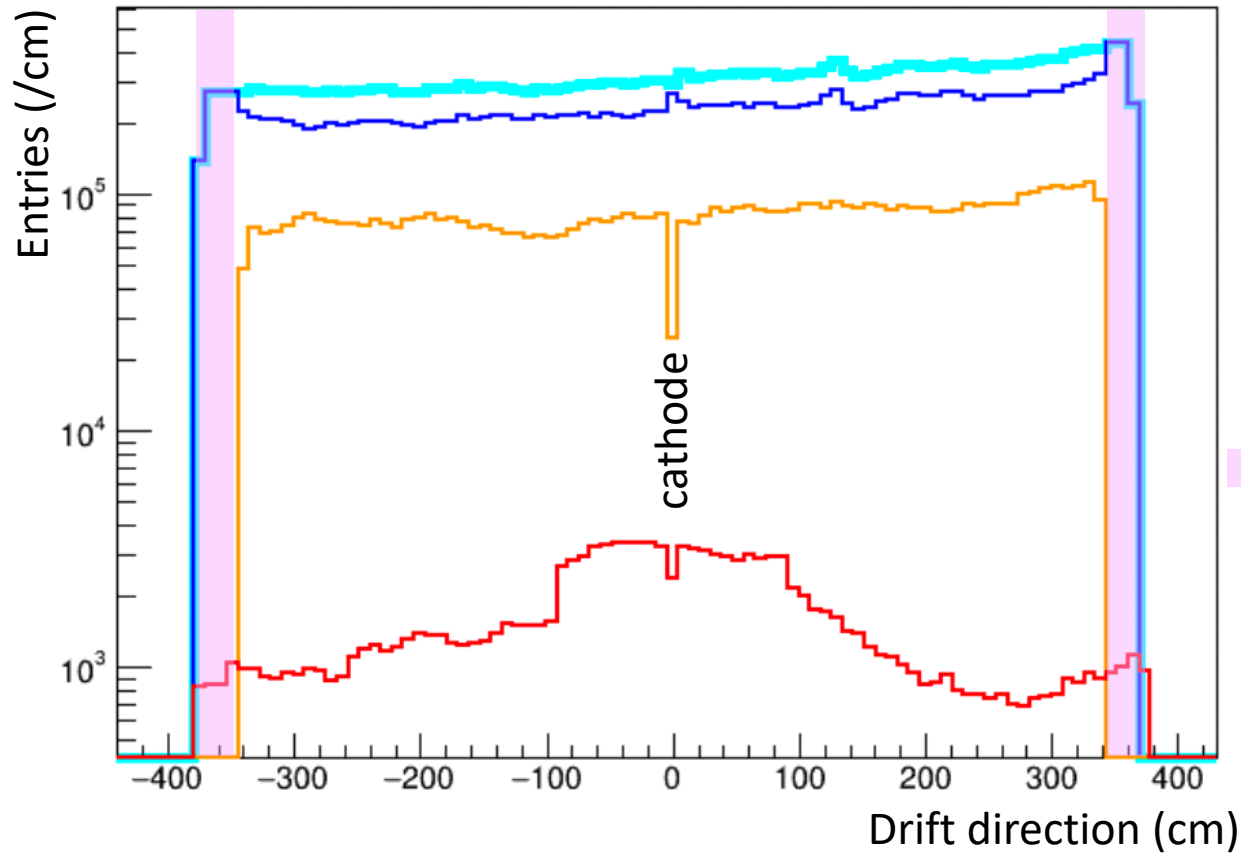


SimEnergyDeposits:

- Cryostat
- Active volume

Pandora SpacePoints

Energy depositions



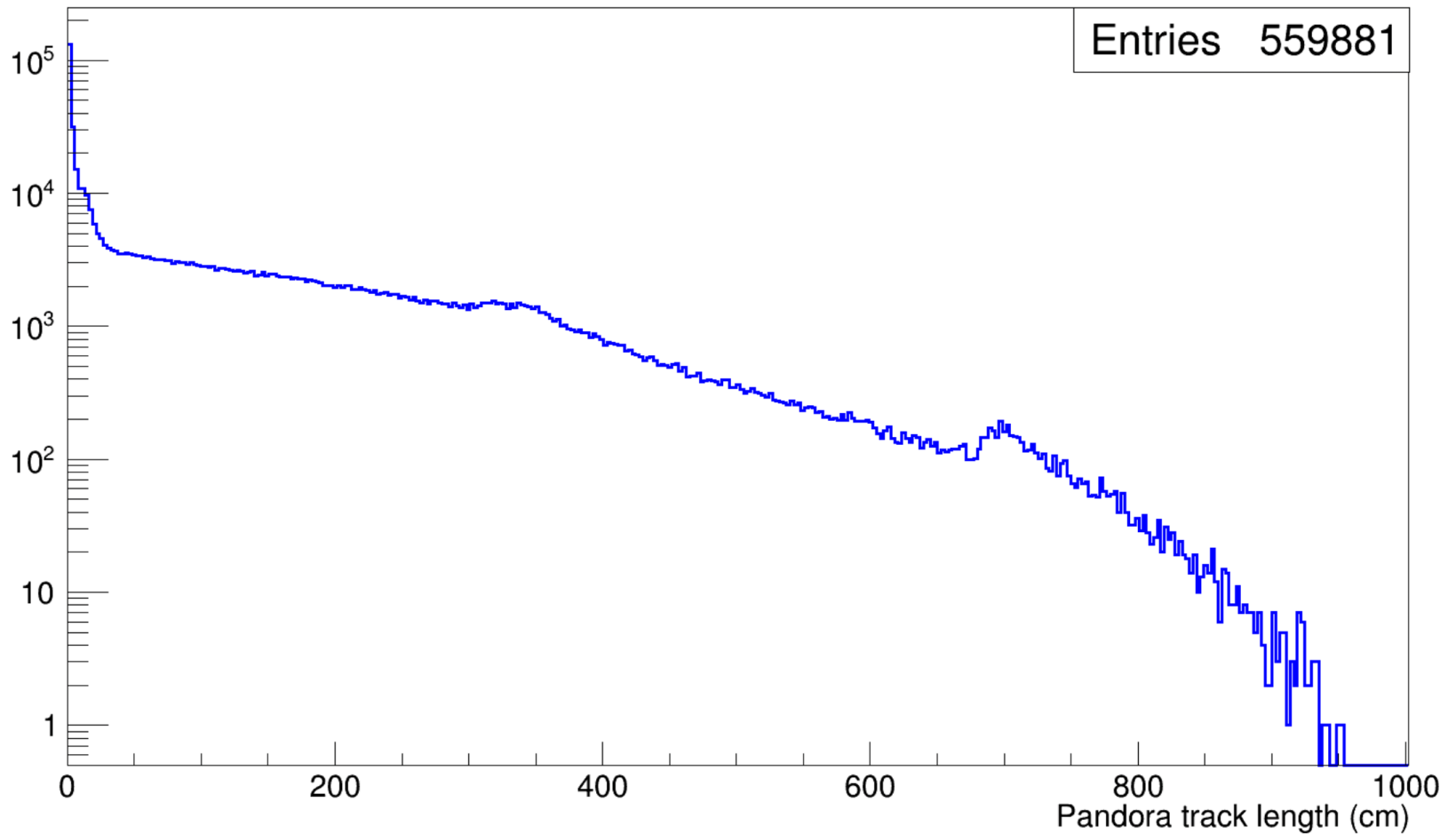
SimEnergyDeposits:

- Cryostat
- Active volume

Pandora SpacePoints

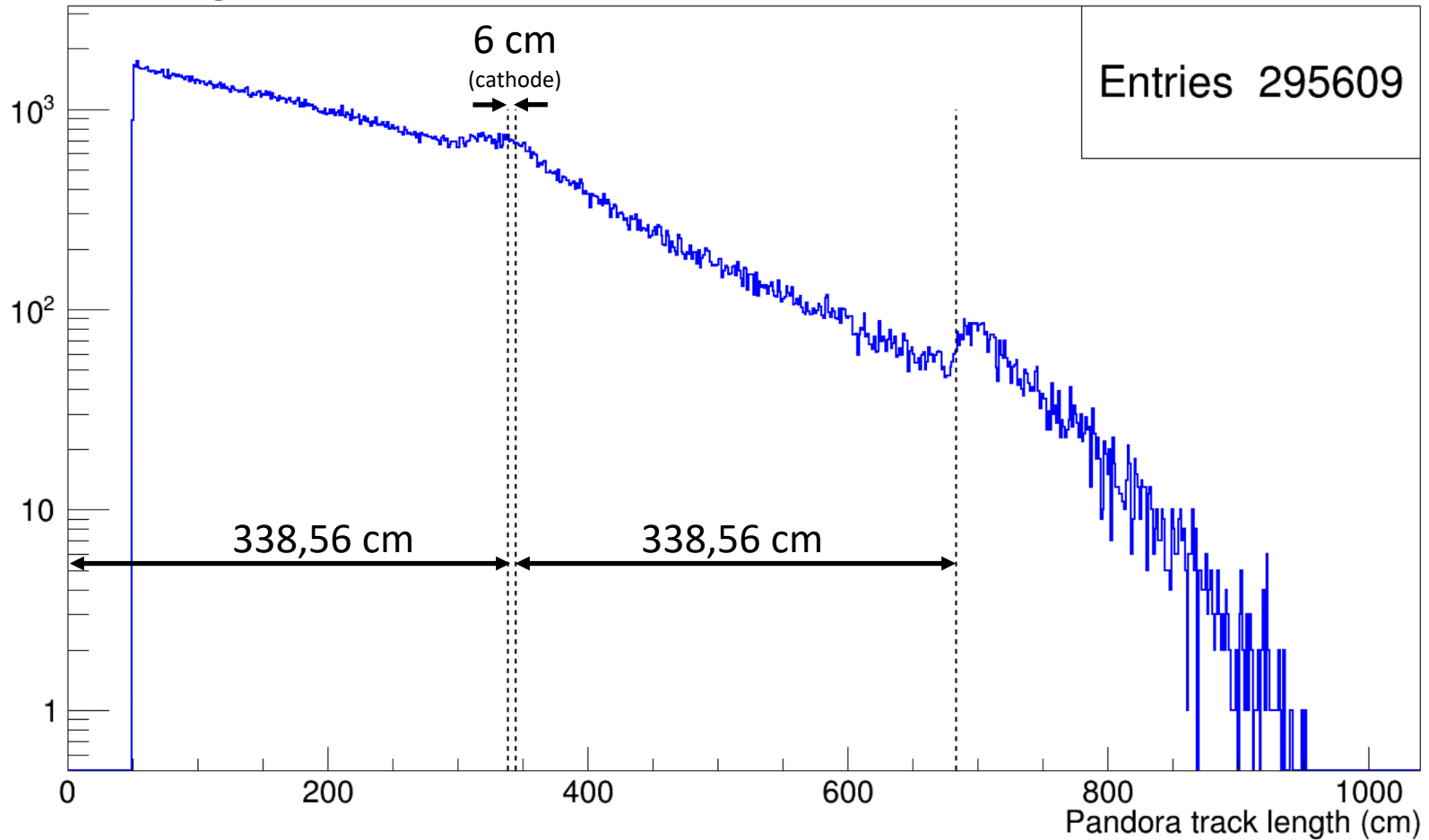
Non AV hits from cosmic starting at mis-matched TO

Full sample tracks length



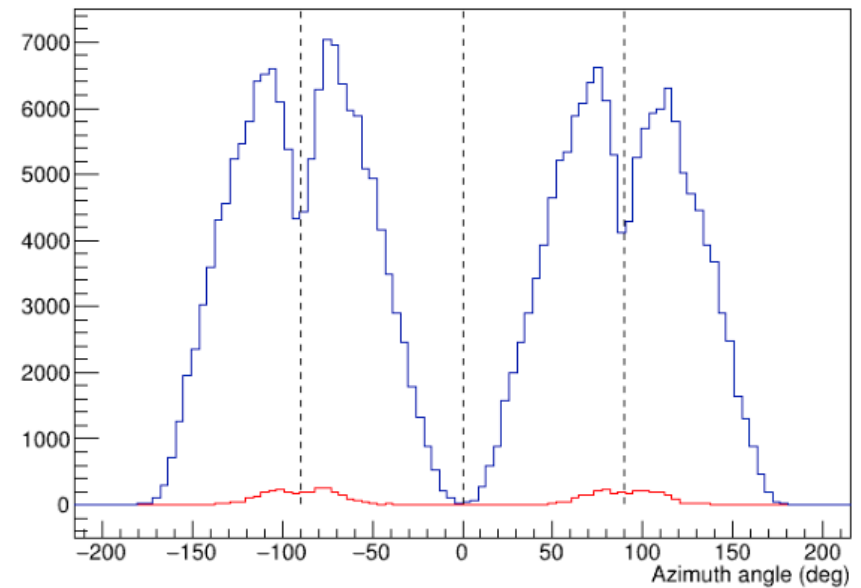
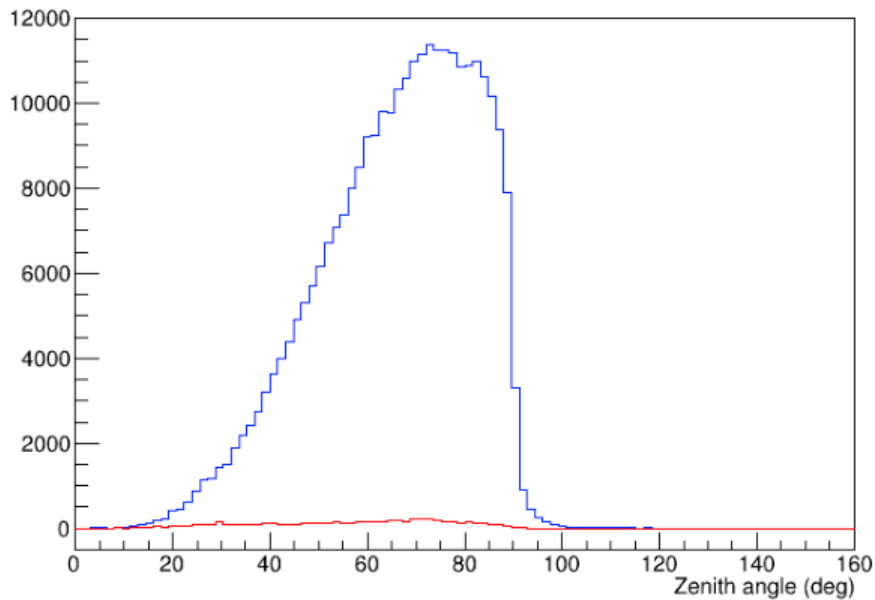
Tracks length

- Tracks longer than 50 cm

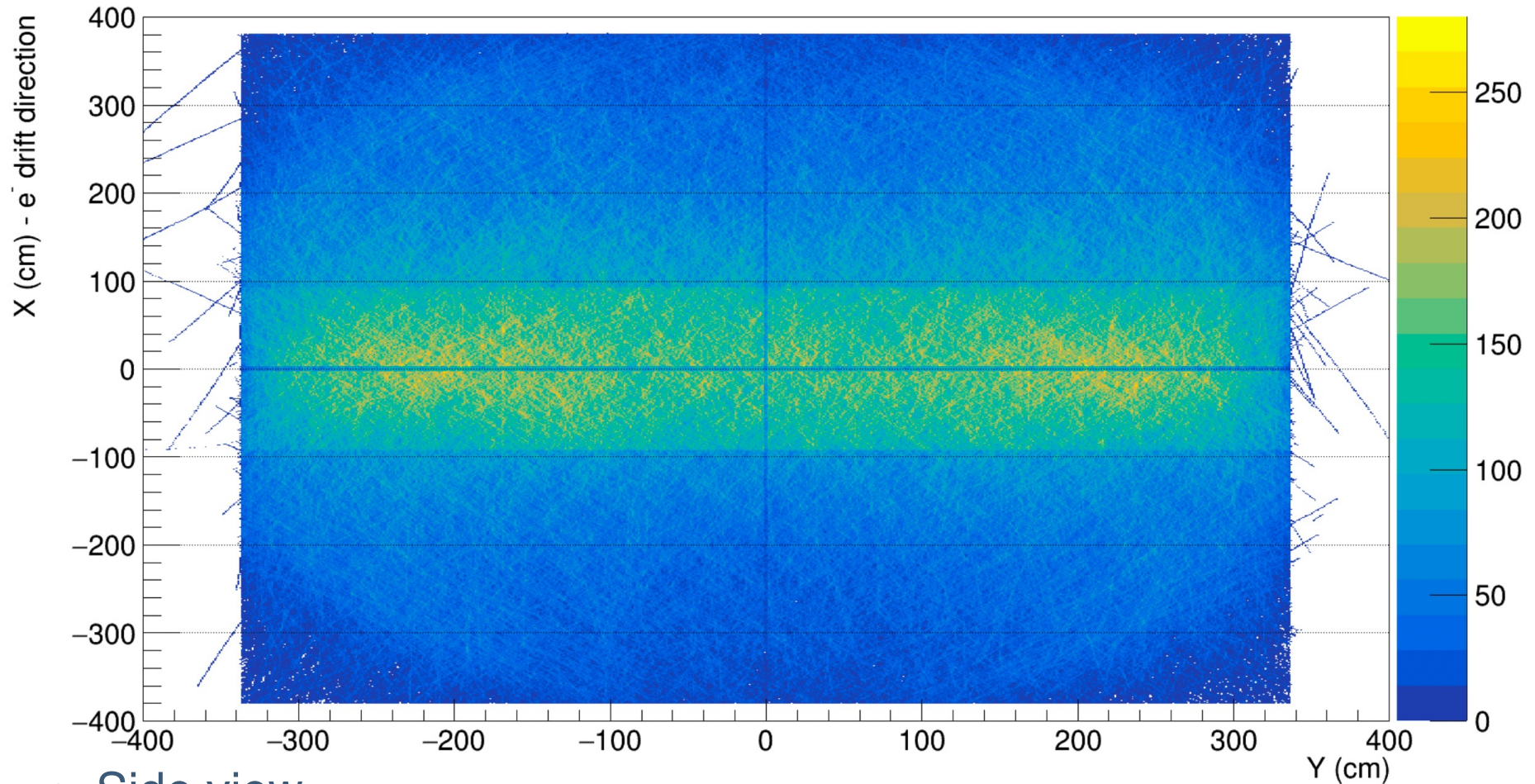


Angular distributions

- Track length:
 - [50 – 800] cm
 - [650 – 800] cm

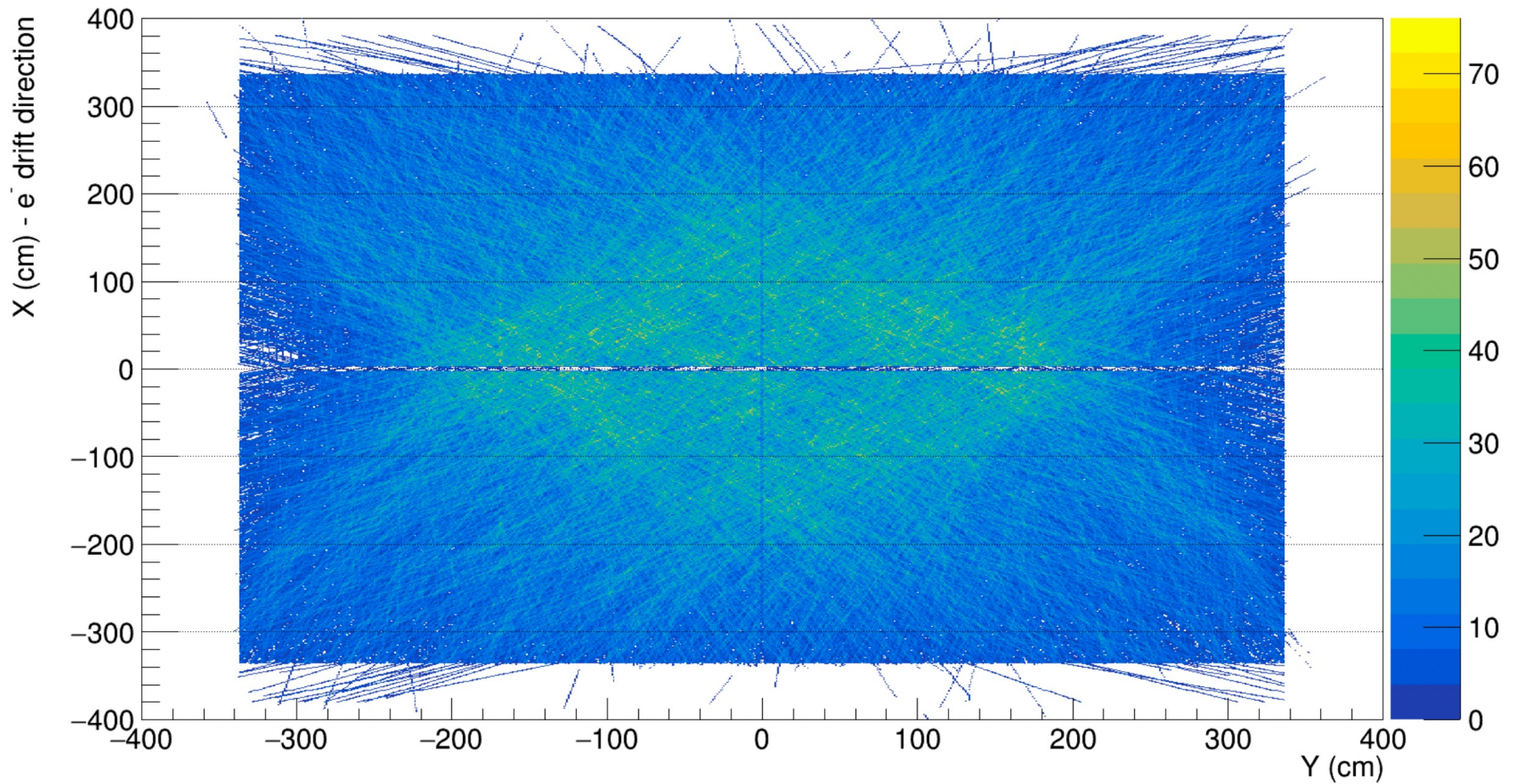


Tracks distribution



- Side view

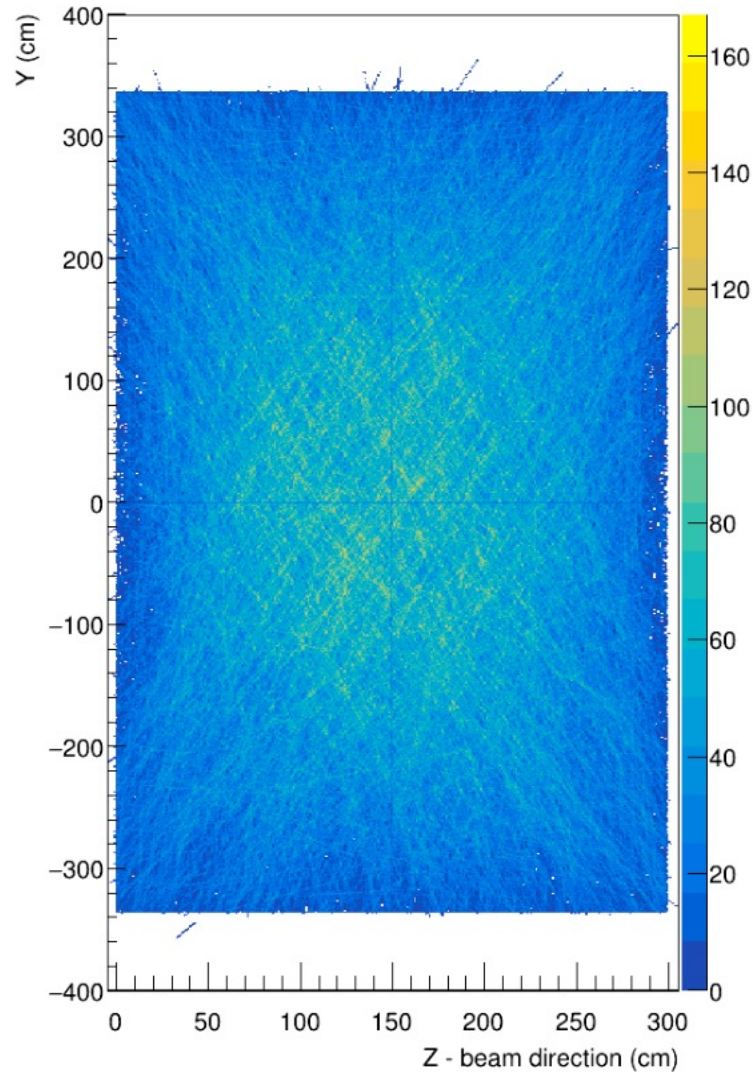
7 m long tracks distribution



- Side view

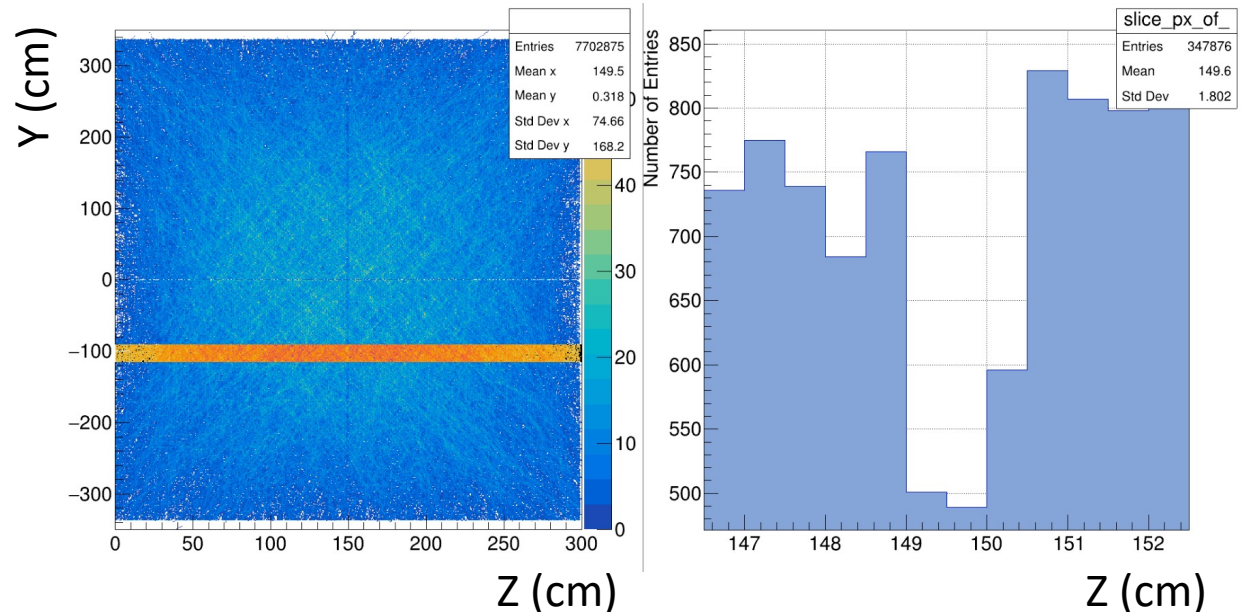
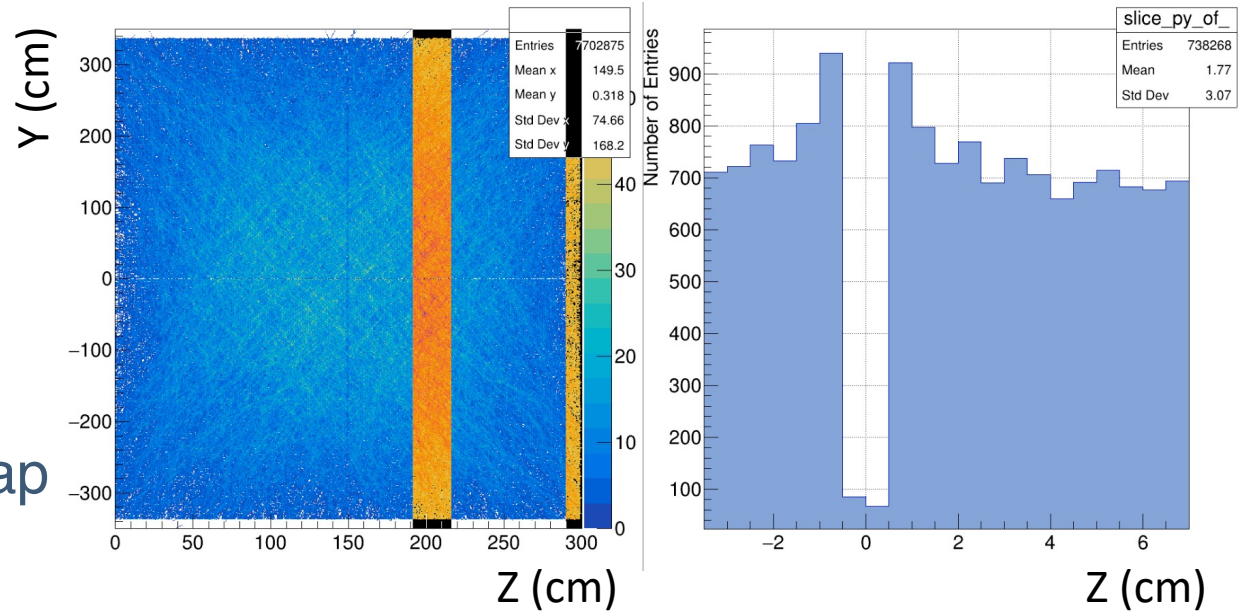
7 m long tracks distribution

- Top view

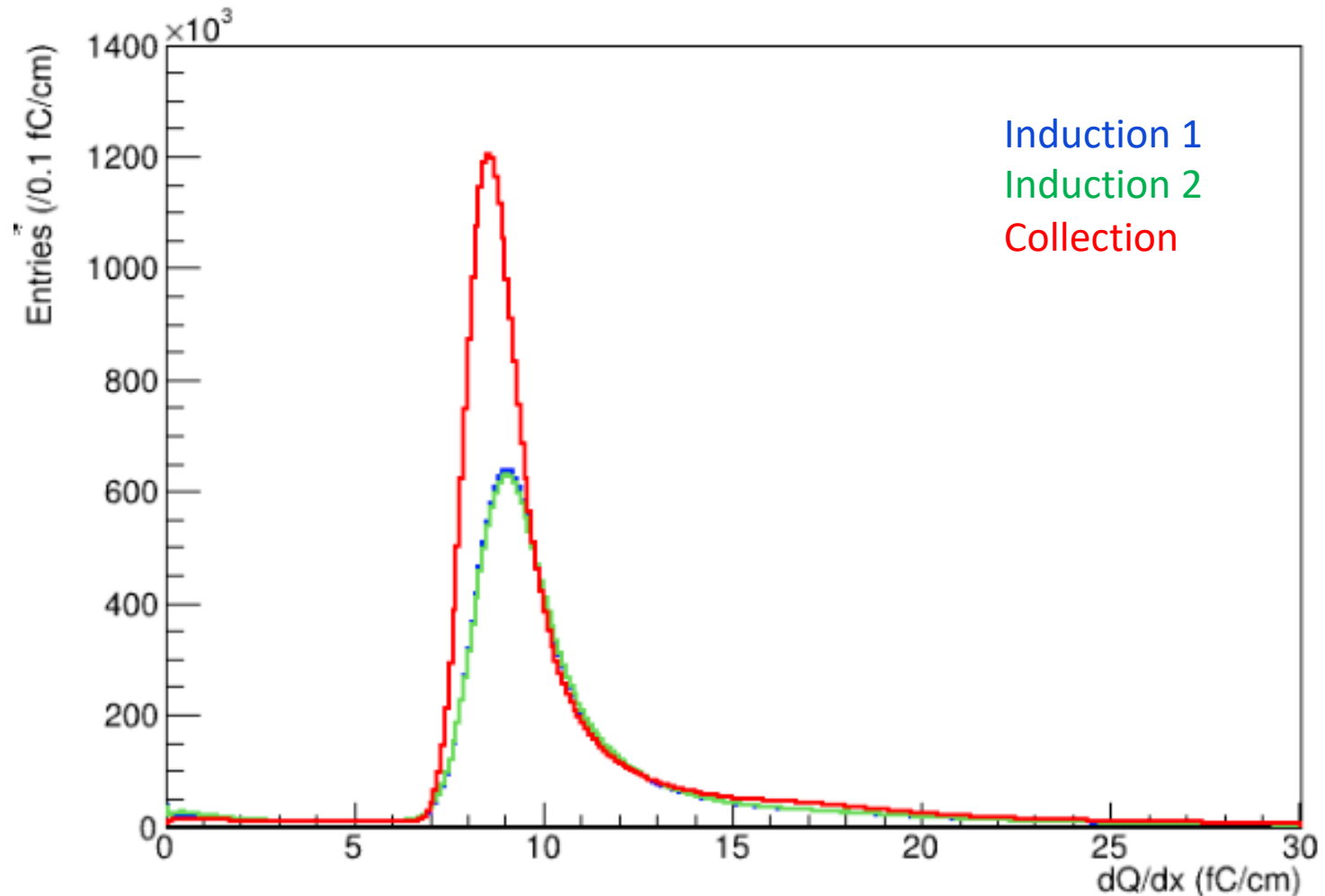


CRP gap

- Top view
- Simulated CRP gap lies below 1 cm

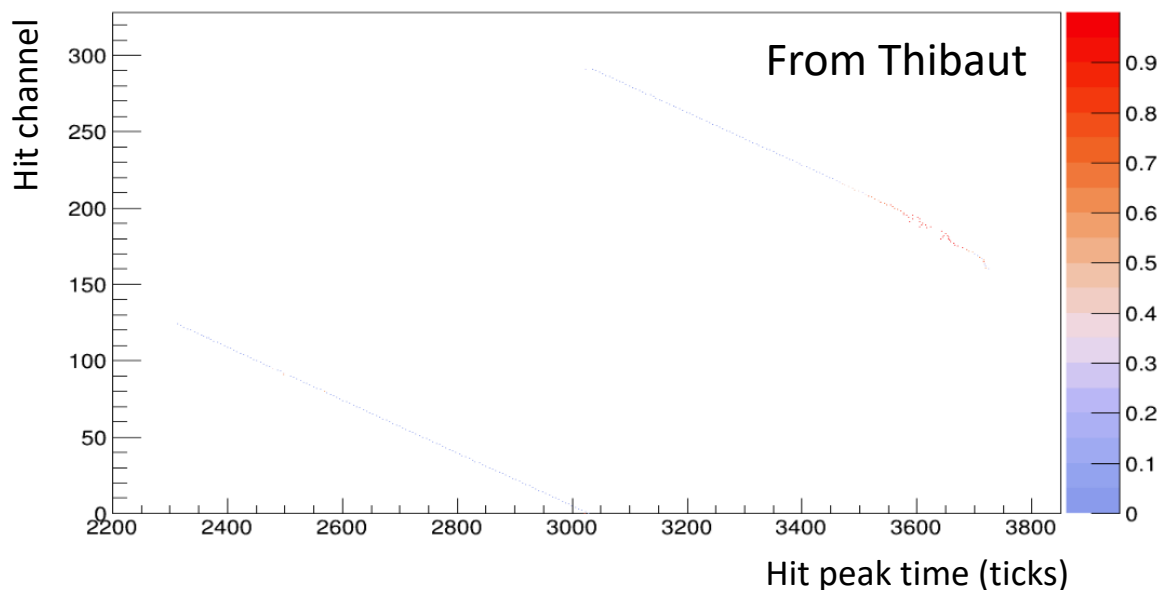


[1-7] m long tracks dQ/dx



Pattern recognition

- Working on implementing the PDSP pre-trained CNN used for the track/shower/michel publication
- Seems to work out-of-the-box reasonably qualitatively
- Example of Michel score:



- Need more quantitative metrics looking at truth information