Karlsruher Institut für Technologie

Look at CDC Wire Hits in GCR

Hit Efficiencies and Bad Regions

Michael Eliachevitch | January 19, 2018

ETP – KIT

- Looked at CDC wire hits in GCR August 2017 data
- Distribution of number of CDC hits per wire
- Distribution of hit to reco track matching efficiency
  - If a wire is hit, what is the probability that this hit is used in a reconstructed track?
  - Due to missing beam background, expected to be high, similar to hit efficiency of track finding
- Saw dead and noisy regions. Reasons known?

On GCR August simulated MC

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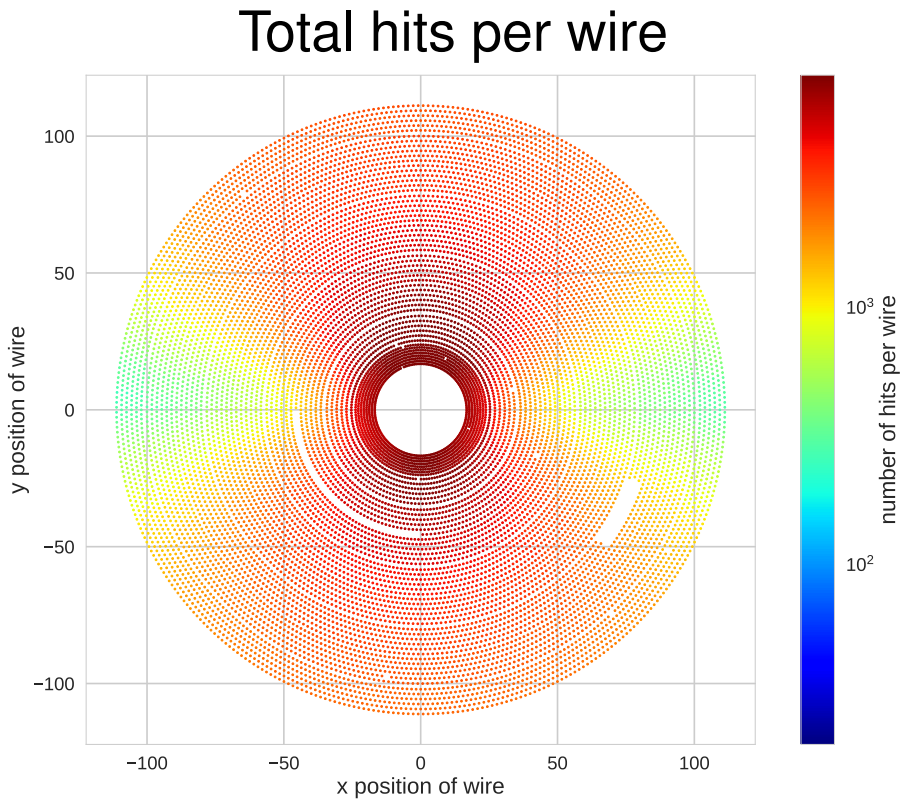

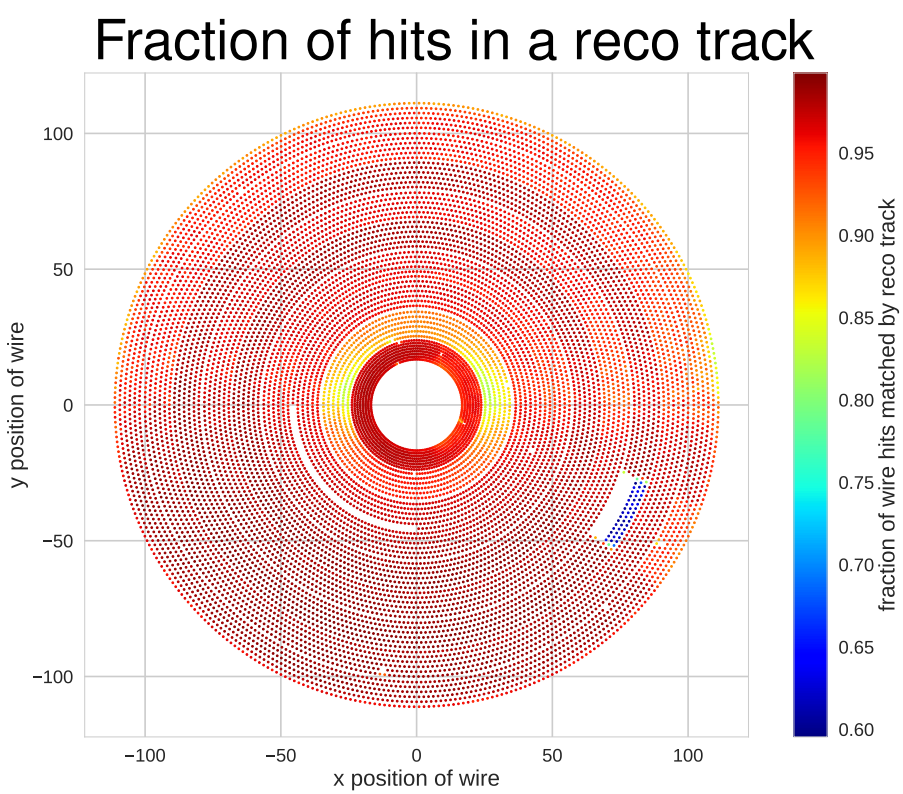

- mostly flat, which is expected
- regions with dead channels already in simulation

On GCR August simulated MC

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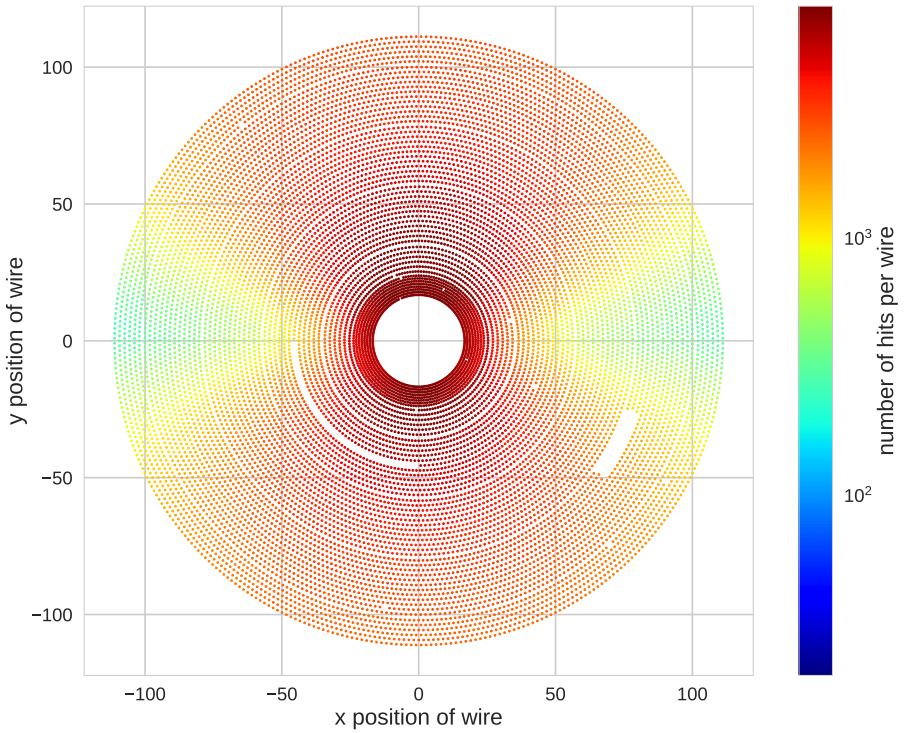
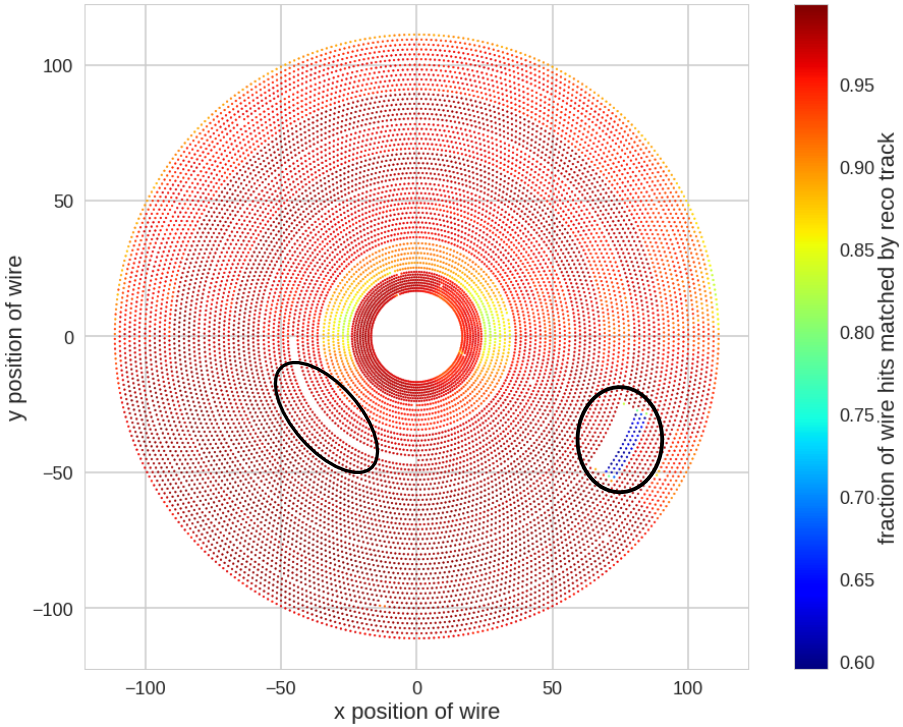
Total hits per wire



Fraction of hits in a reco track



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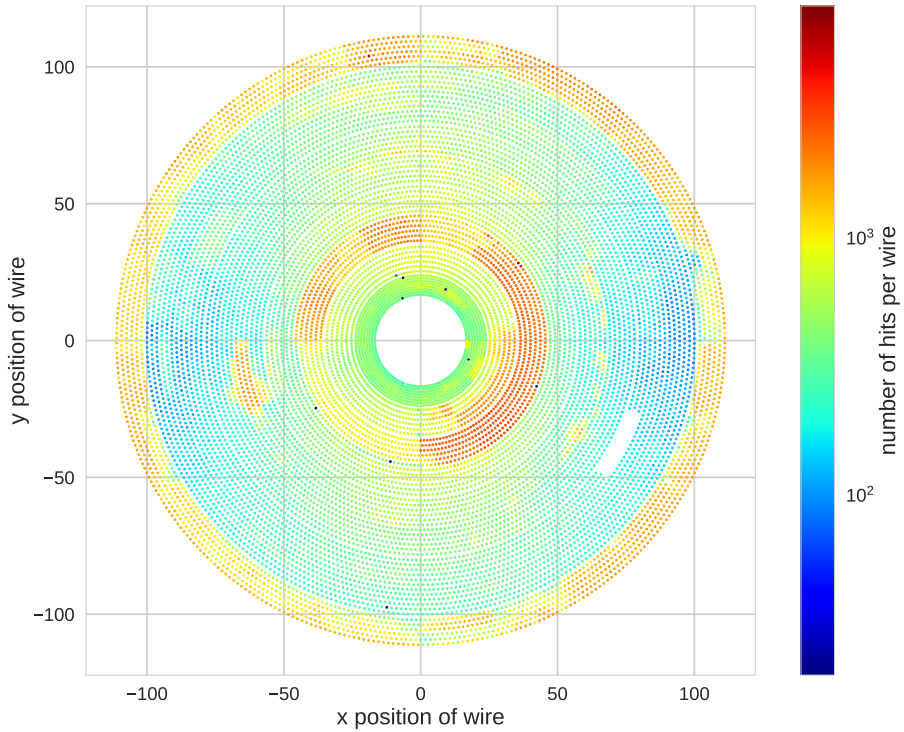
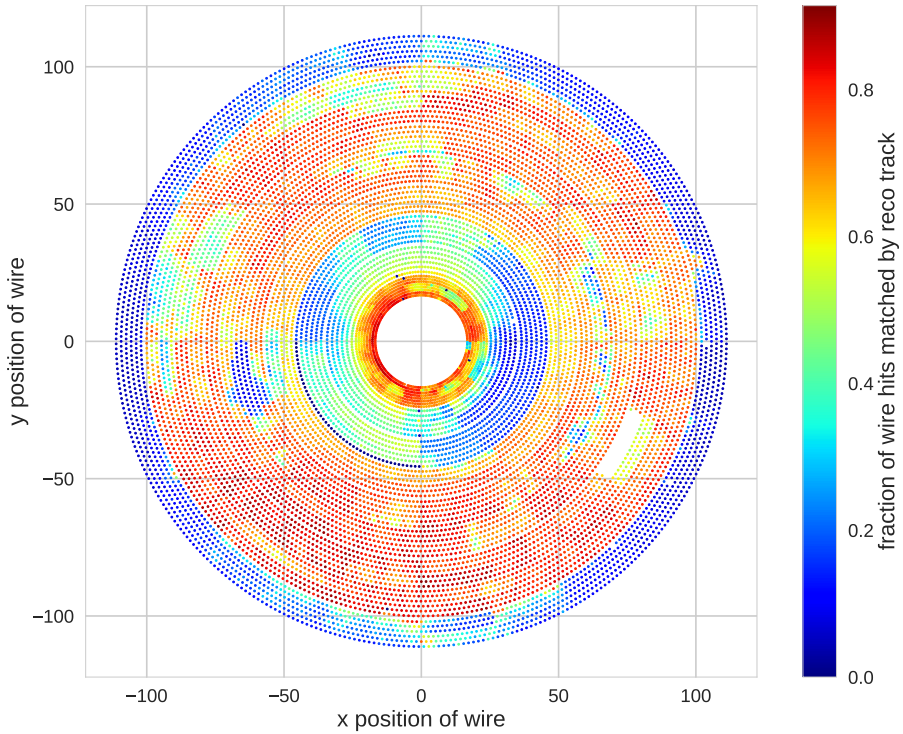
On GCR August measured data

Total hits per wire



Fraction of hits in a reco track



- a lot of structure visible
- again dead region in bottom right (superlayer 7)
- Superlayers 2, 3 and all of 9 (outside) noisy, a lot of unmatched hits.

On GCR August measured data

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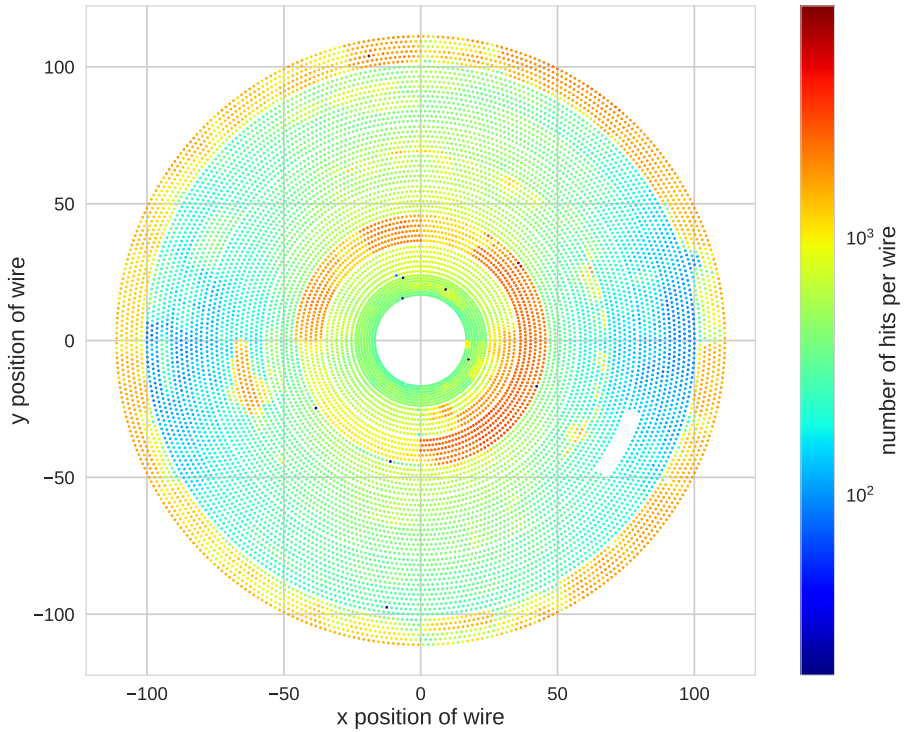
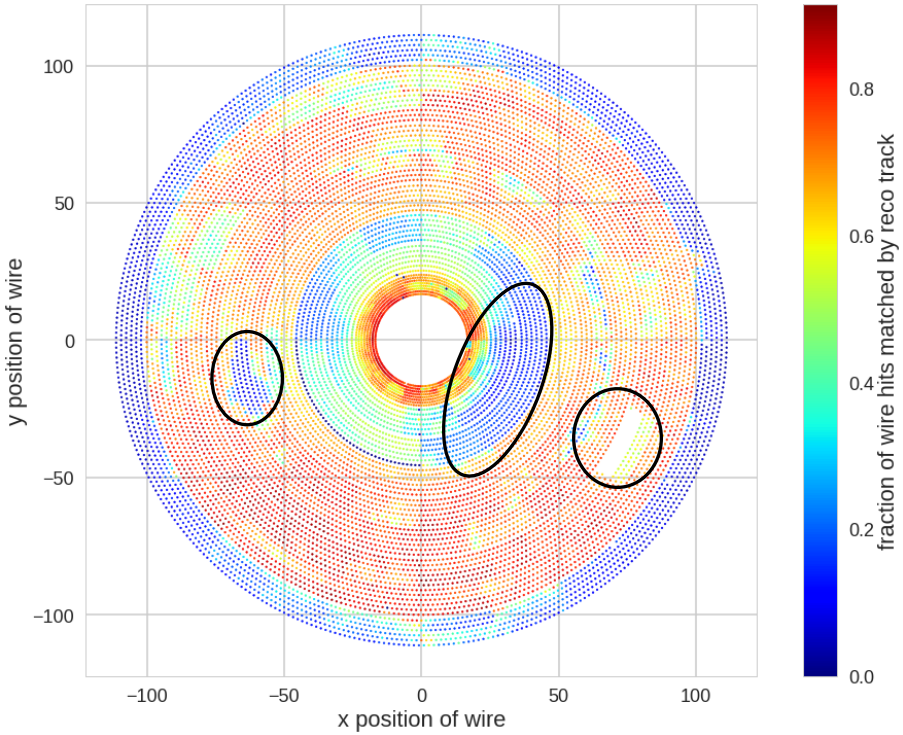
Total hits per wire



Fraction of hits in a reco track



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Summary and Questions

- Regions with dead wires in GCR
  - Are the reasons known?
  - Can that be fixed and are there plans?
- Noisy regions:
  - regions with many unmatched hits, e.g. superlayers 2, 3 and 9
  - Is that known? Are there ideas, what the reasons might be? Noisy readout? Background?