dE/dx truncation

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Production & analysis meeting

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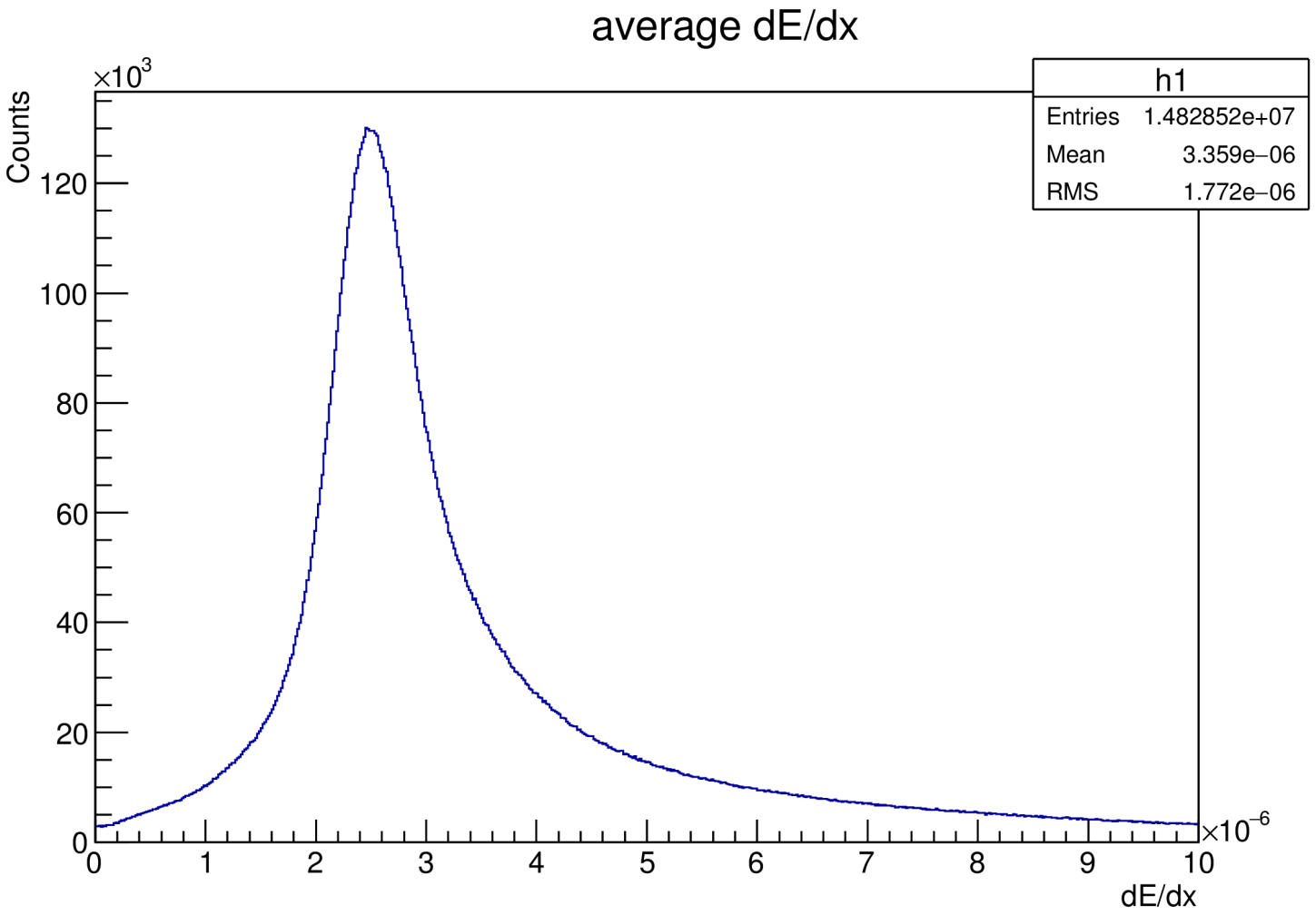
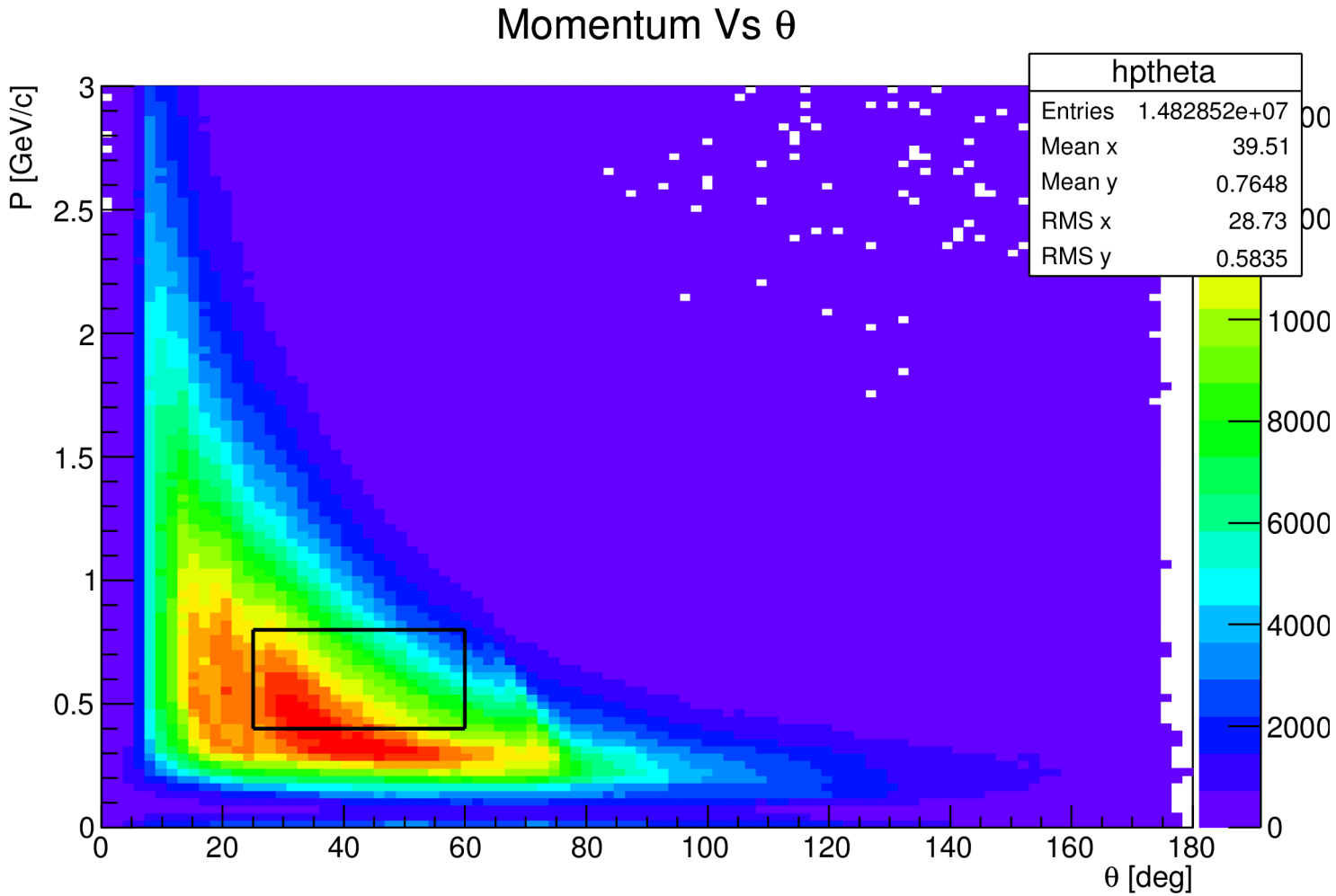
Motivation

- Problem: Not possible to define the mean & resolution => PID
- Solution: cut some hits away → Truncation
  - In this case, we cut away the hits with most dE/dx



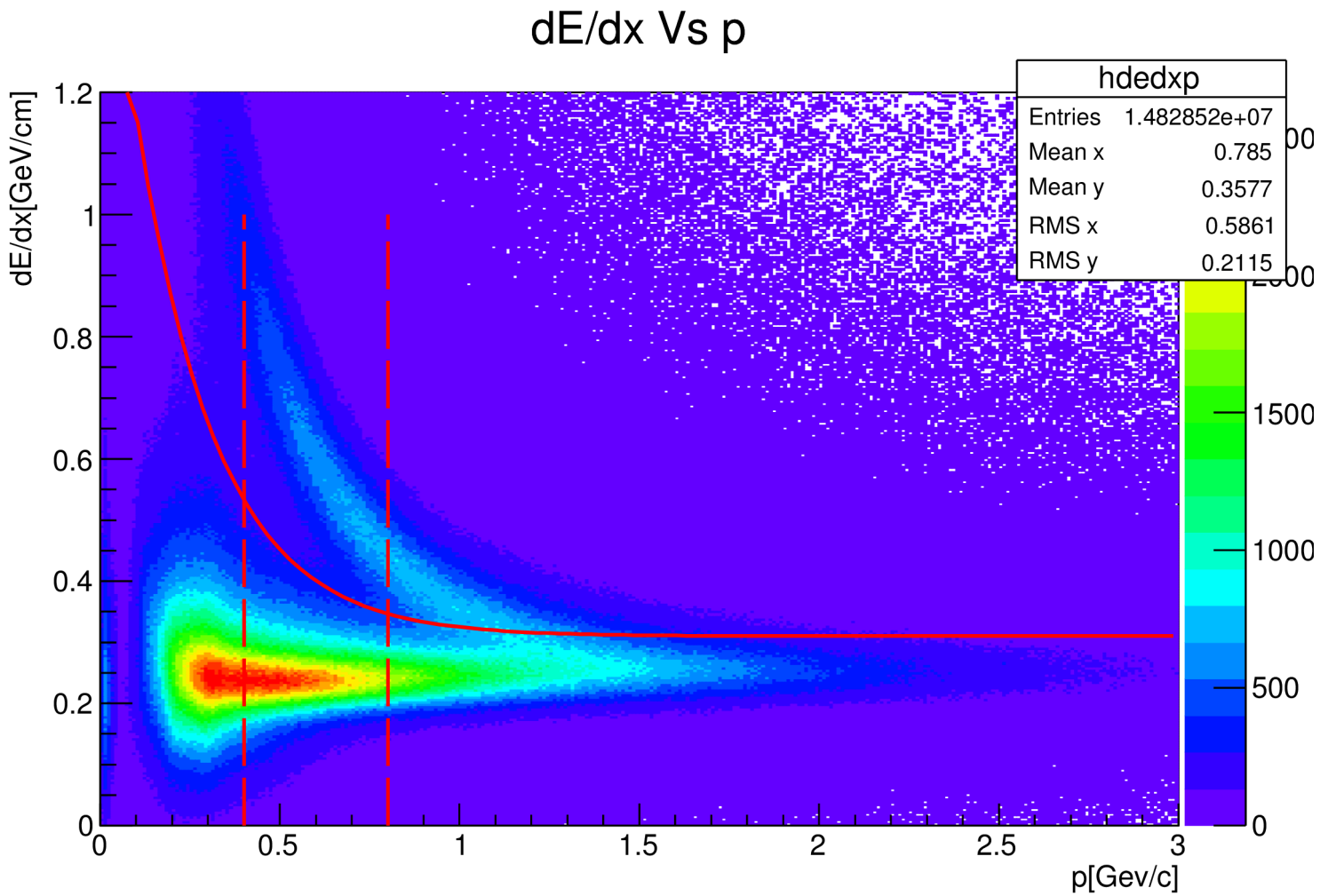
Procedure

- 4 files of 2016 data.
- Hits in the CDC
- Truncation dependence on P & θ



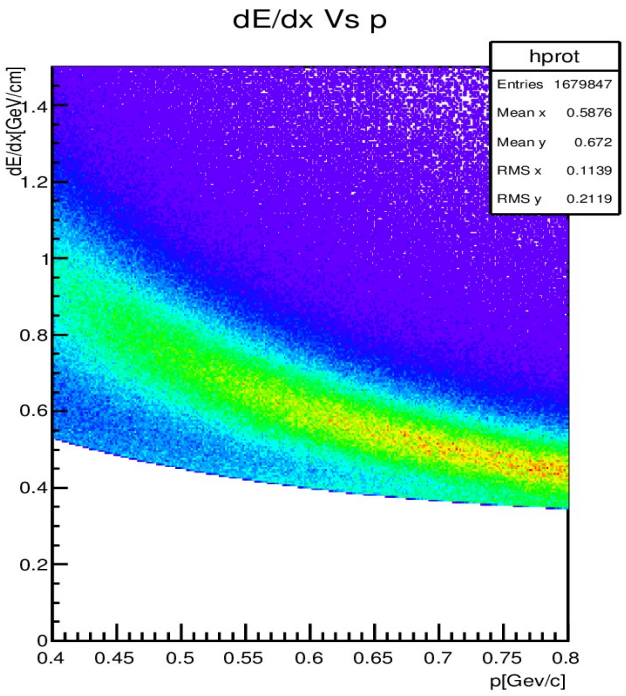
Procedure

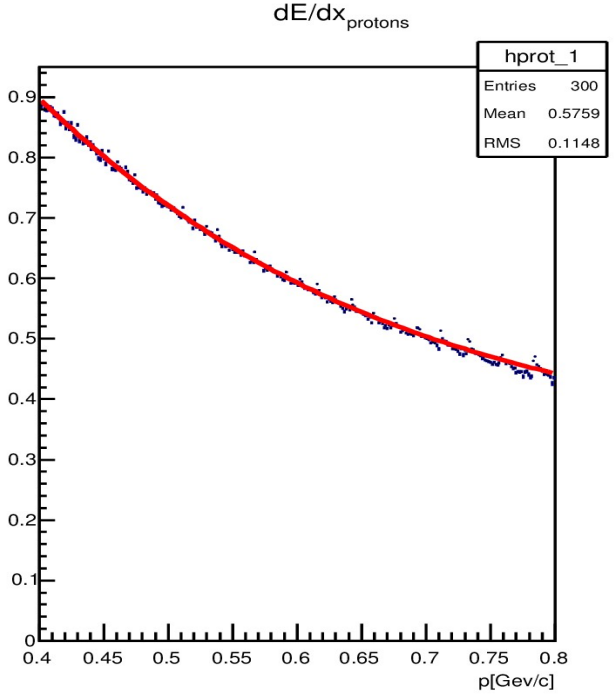
- 1st Step: Select the protons.

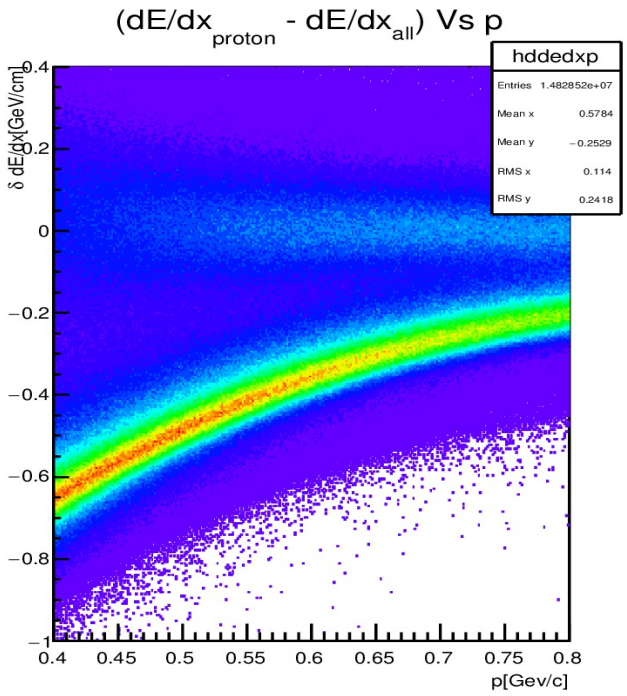


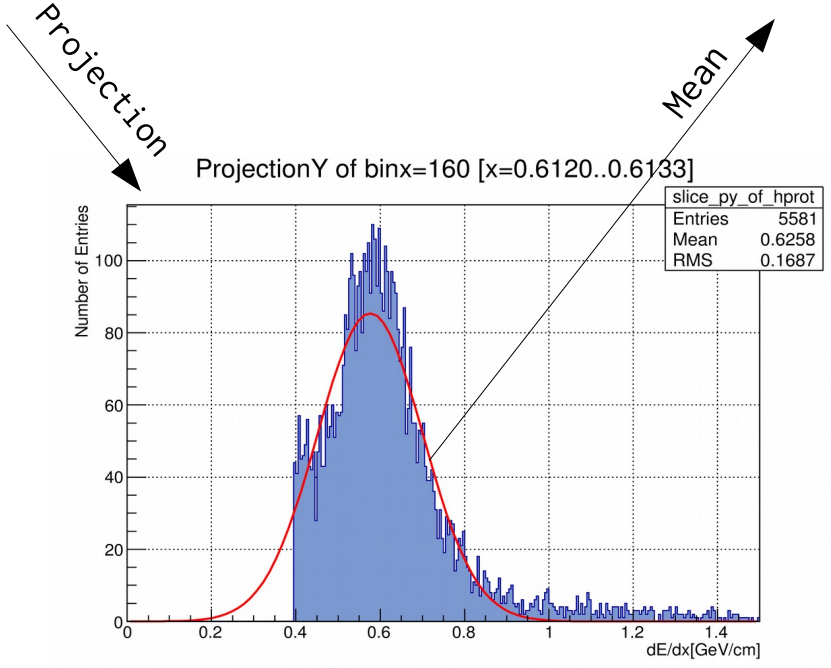
Procedure

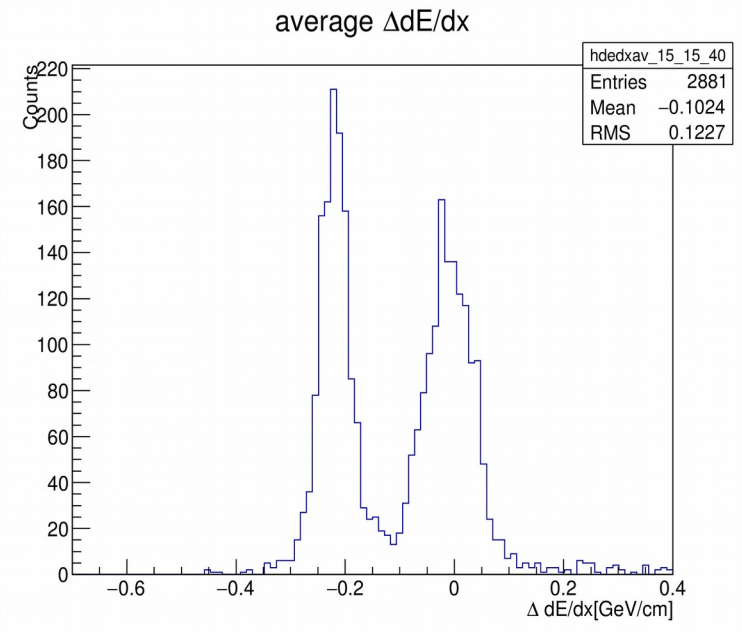
- 2nd step: extract the expected dE/dx for protons





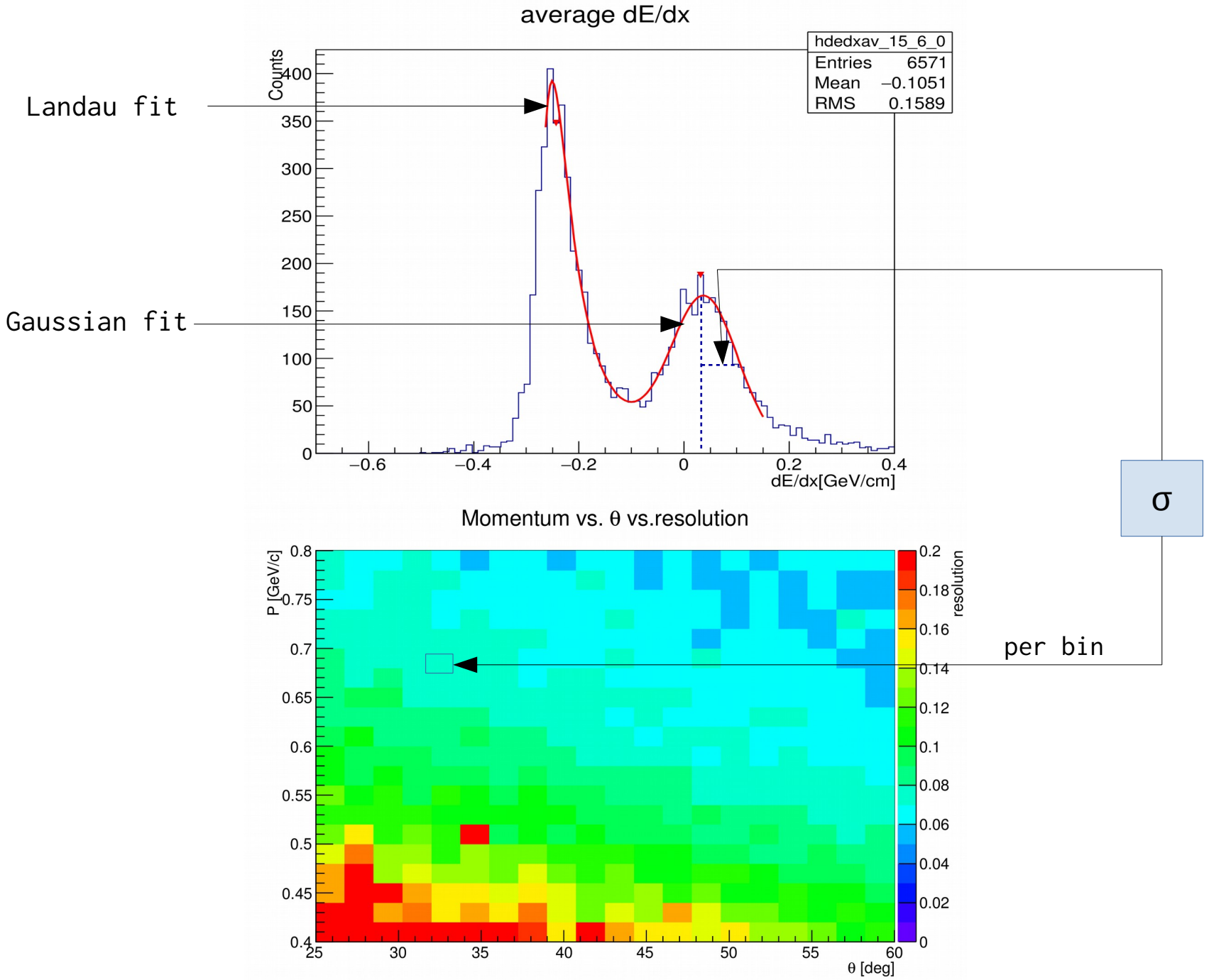






Resolution

- 1st method: best resolution => optimal truncation.



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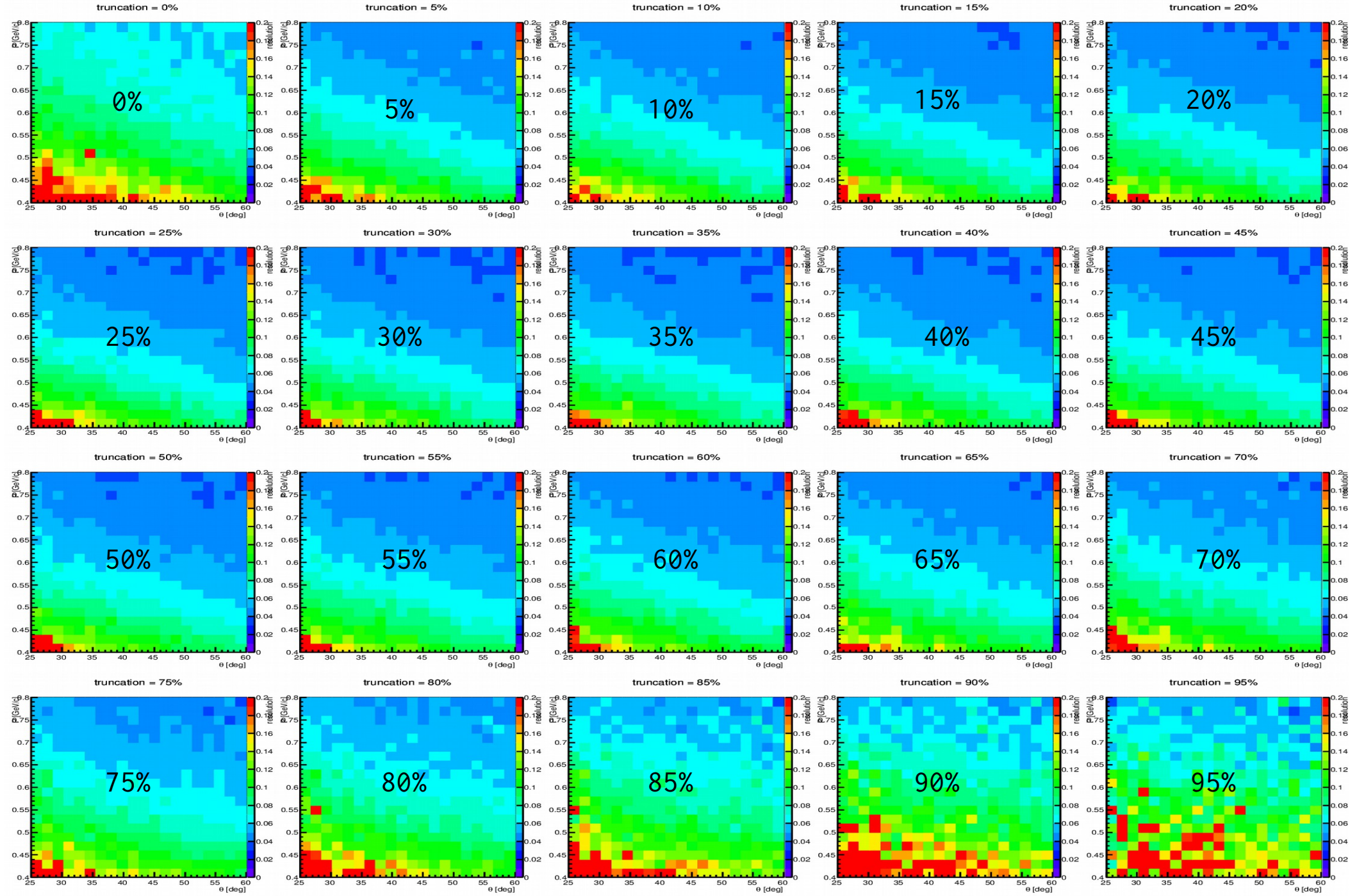
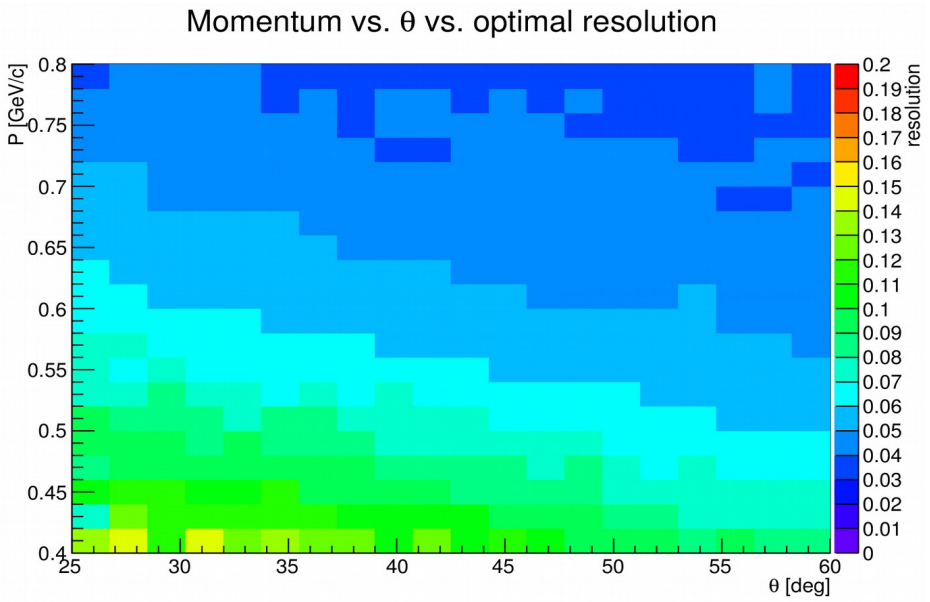
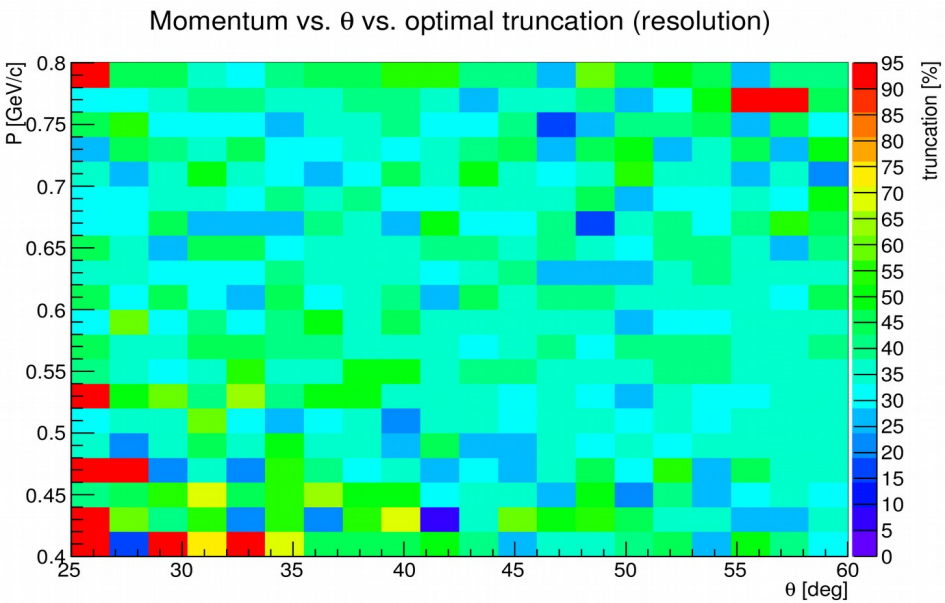
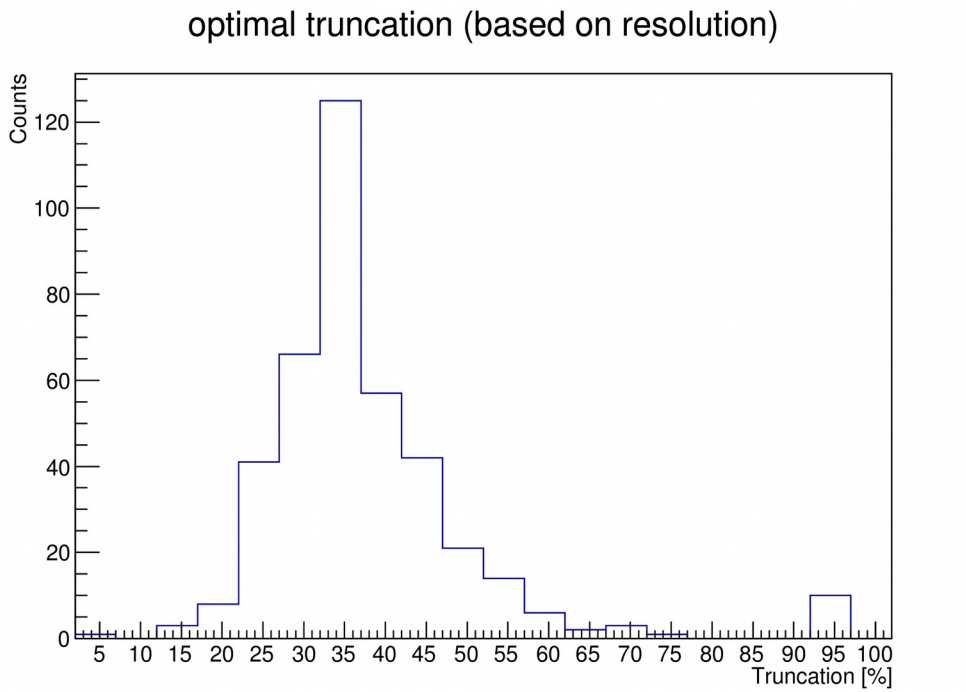


Resolution

- 1st method: optimal truncation ~35%

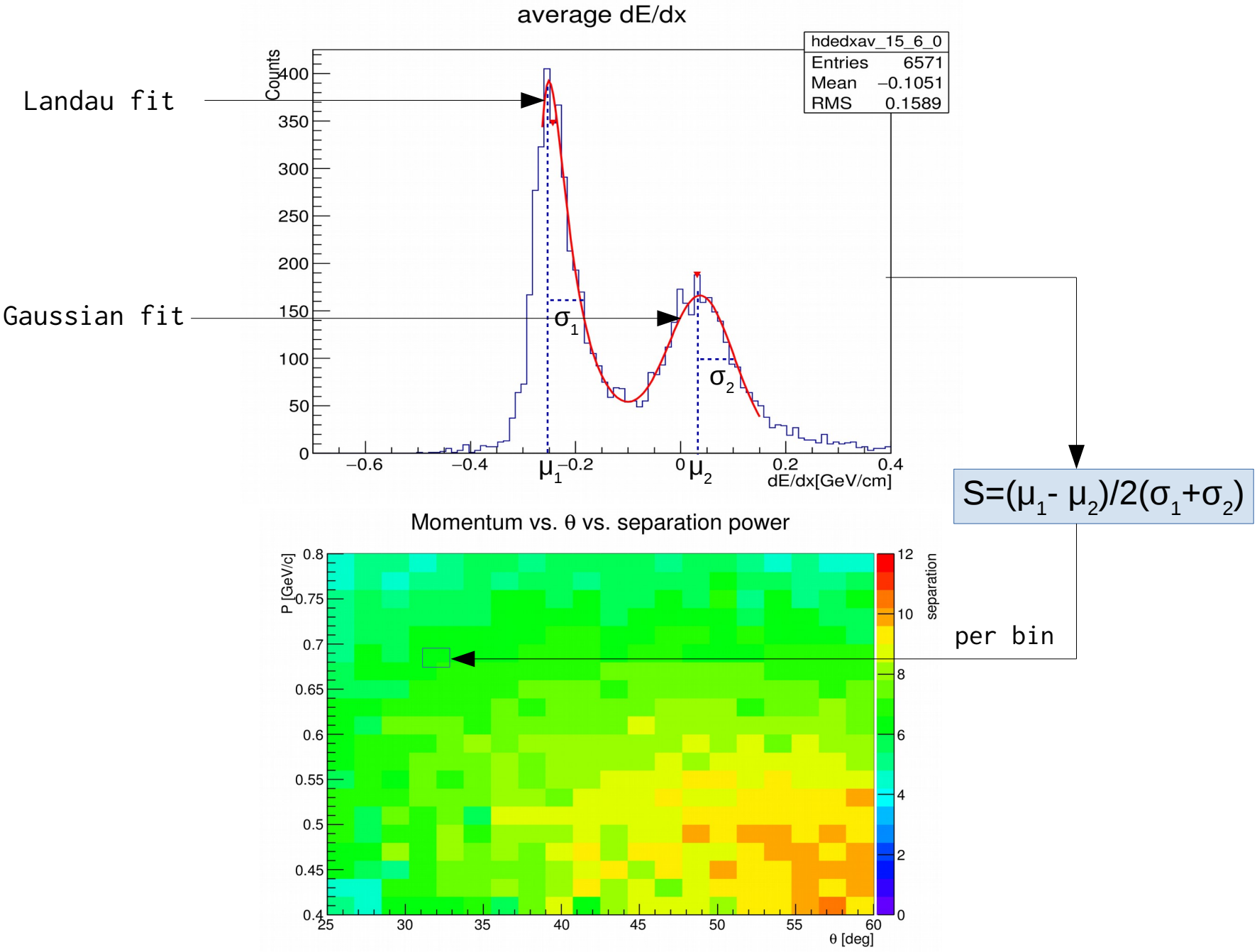






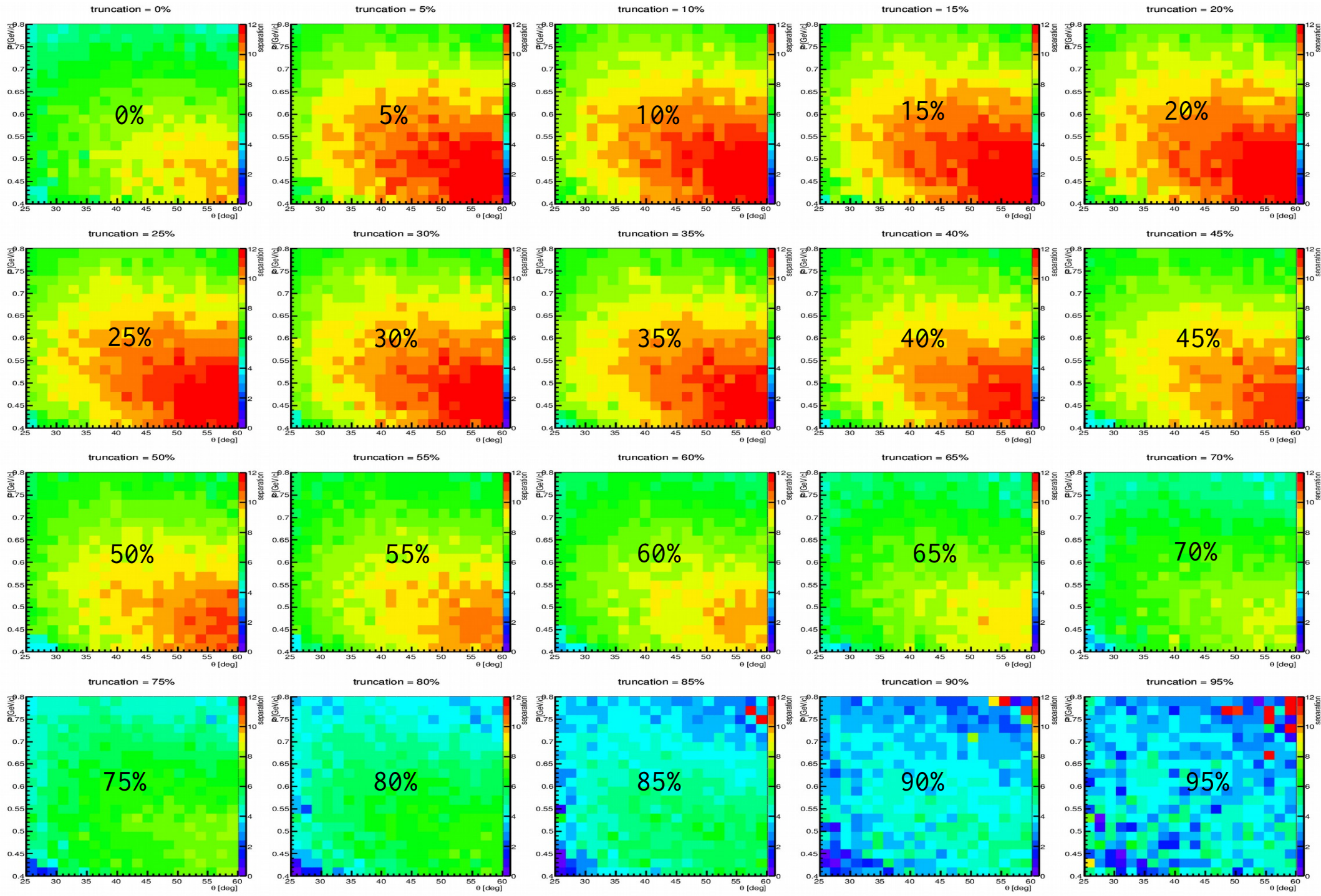
Separation Power

- 2nd method: strongest separation power => optimal truncation.



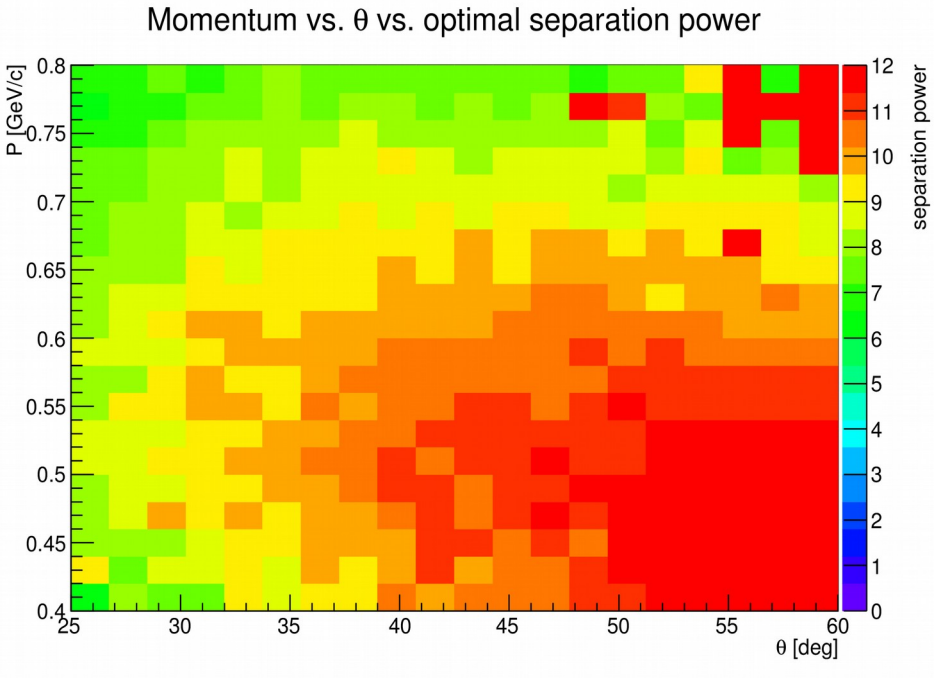
Separation Power

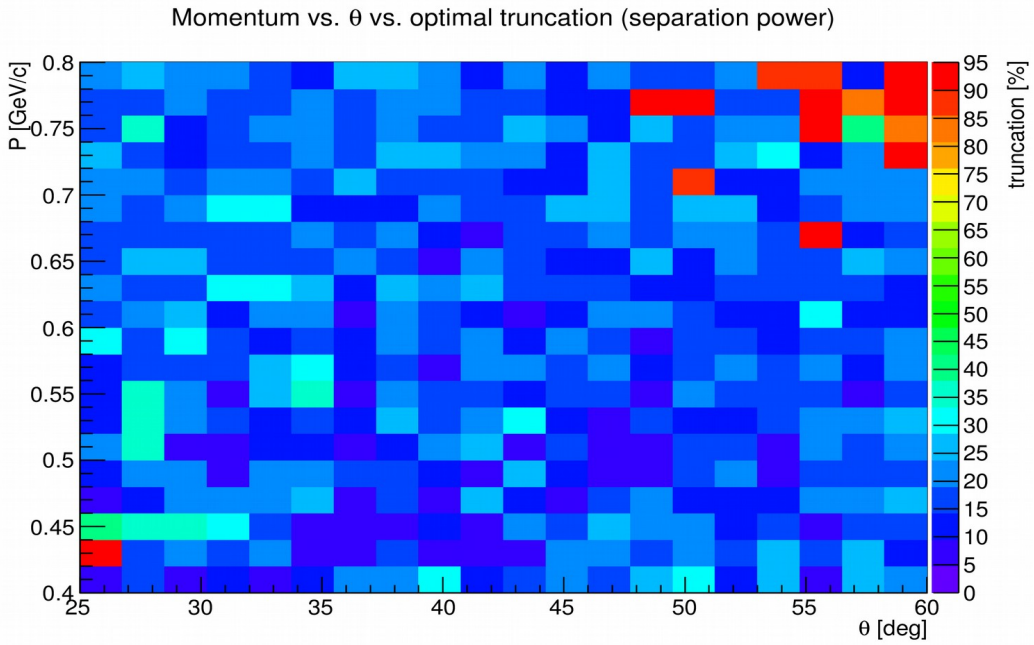
- 2nd method: strongest separation power => optimal truncation.

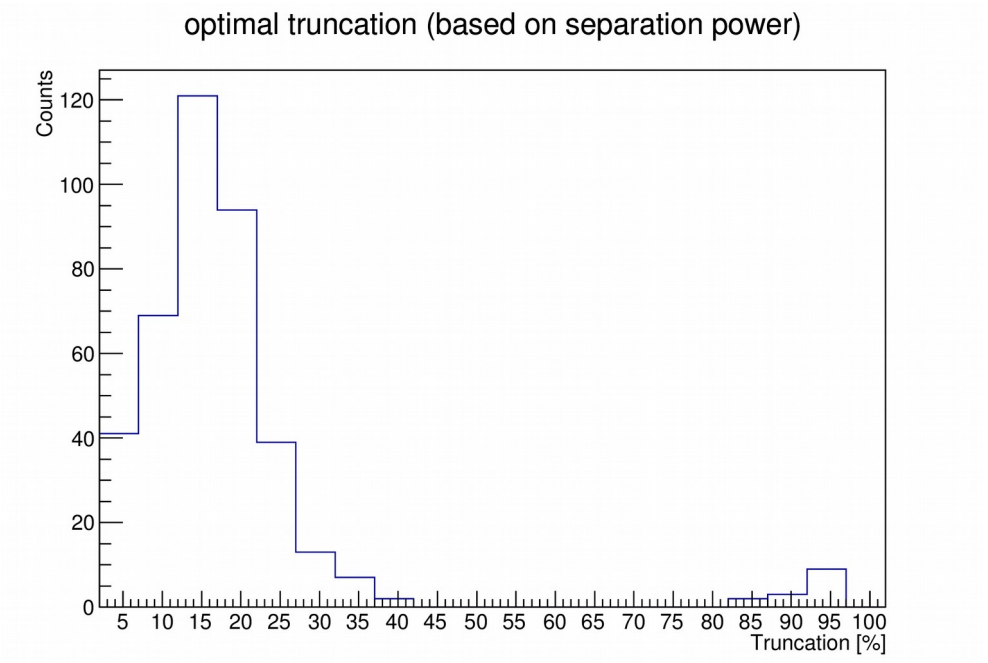


Separation Power

- 2nd method: optimal truncation ~15%



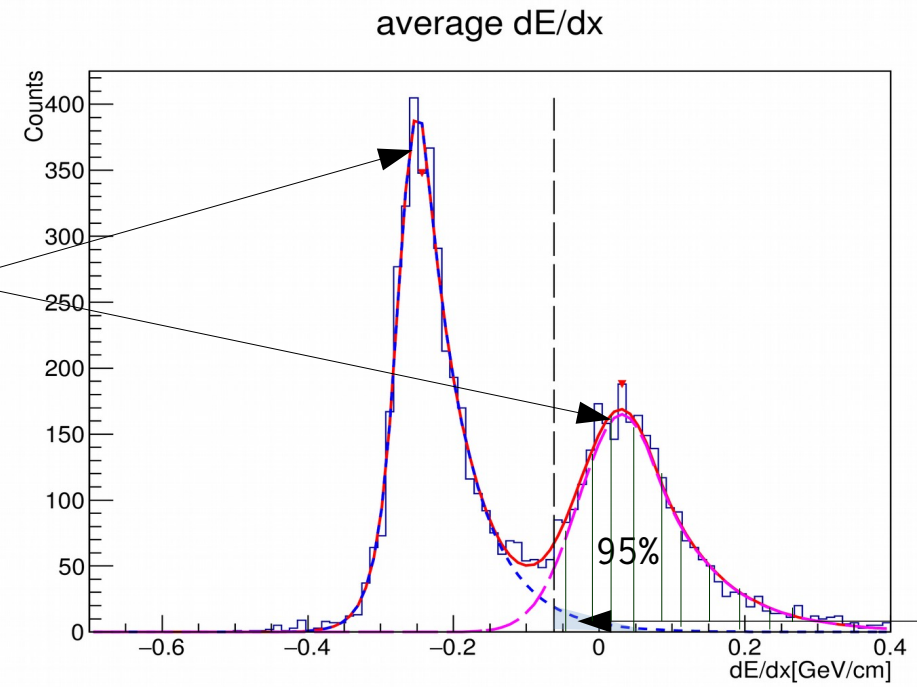


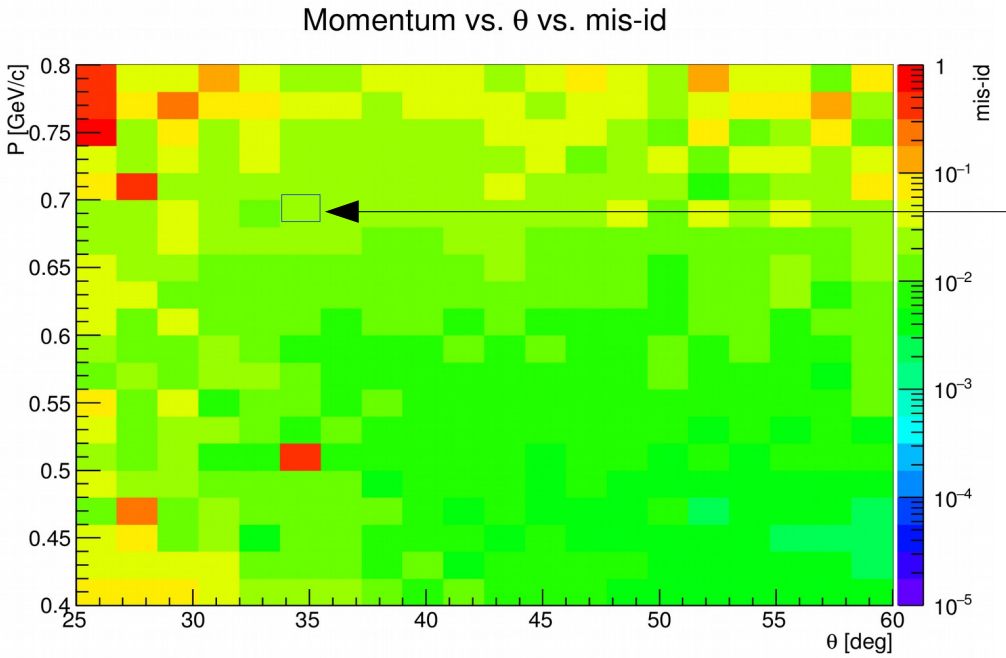


Mis-id

- 3rd method: lowest mis-id => optimal truncation.

Expo tails stitched to Gaus core fit

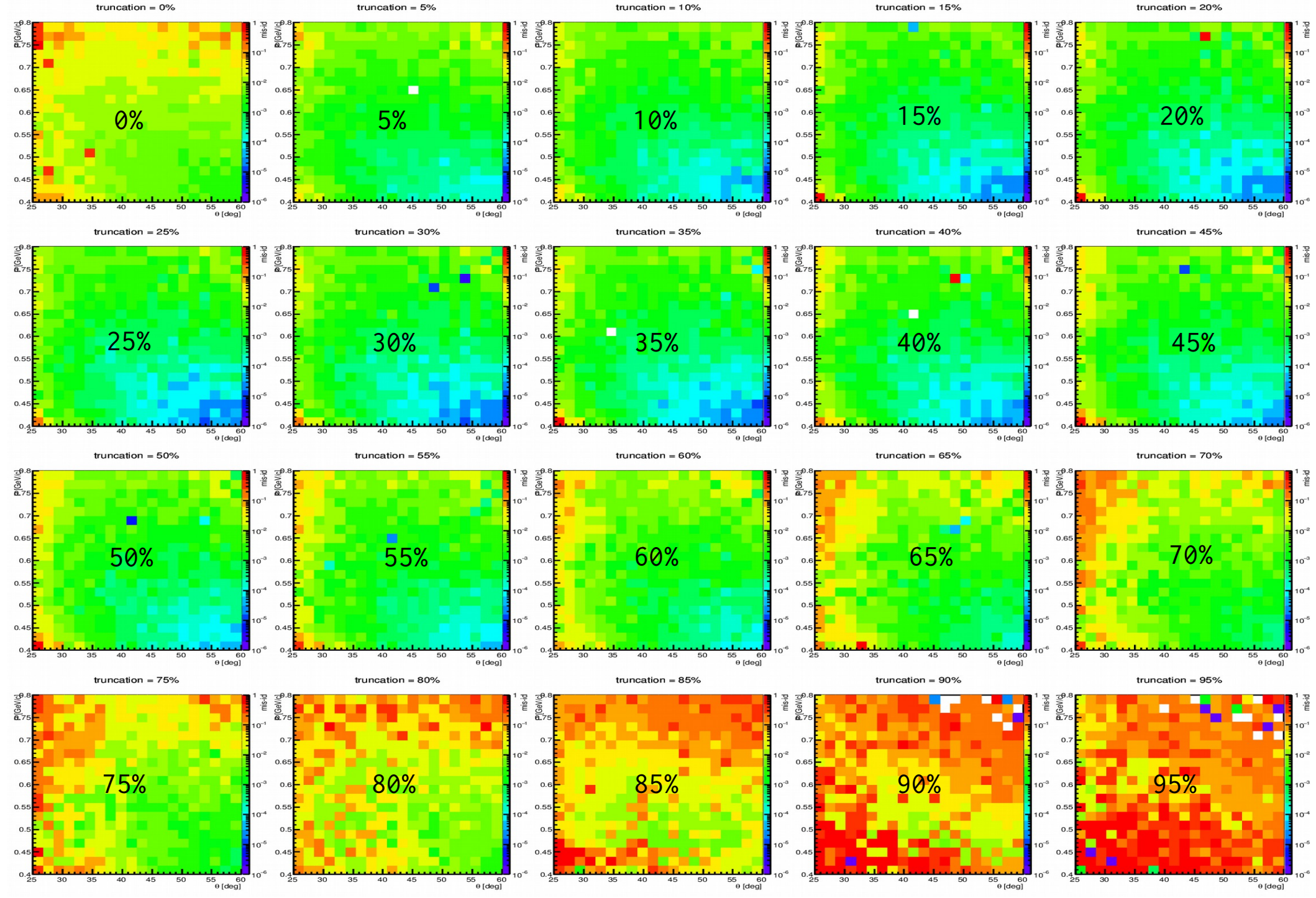




Mis-id per bin

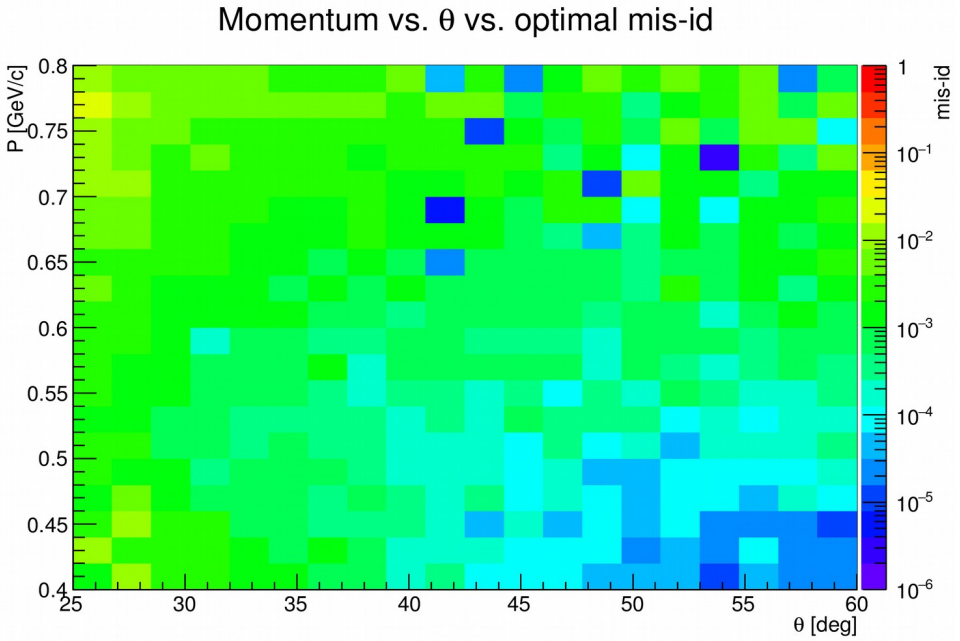
Mis-id

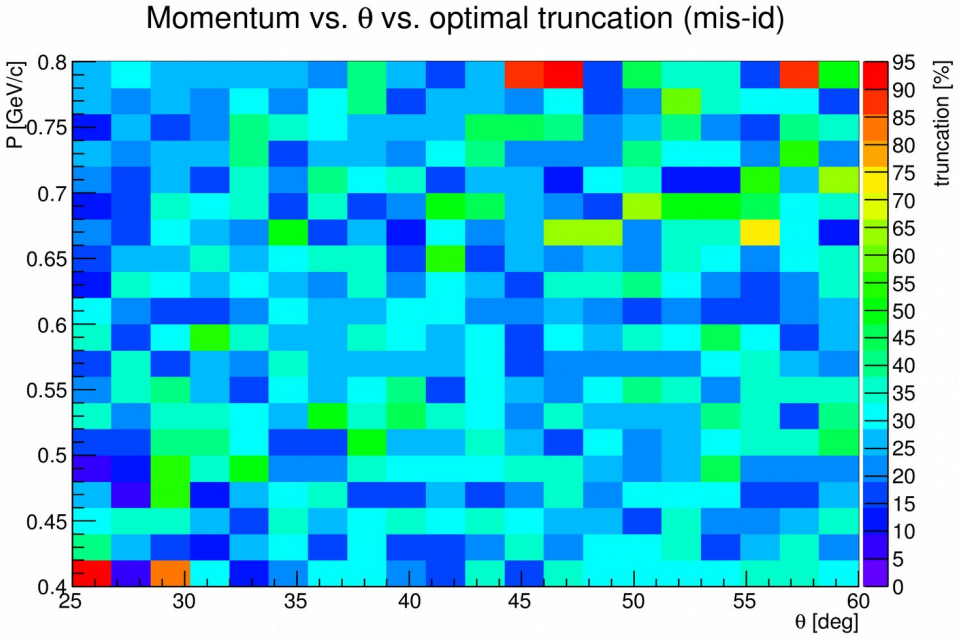
- 3rd method: lowest mis-id => optimal truncation.

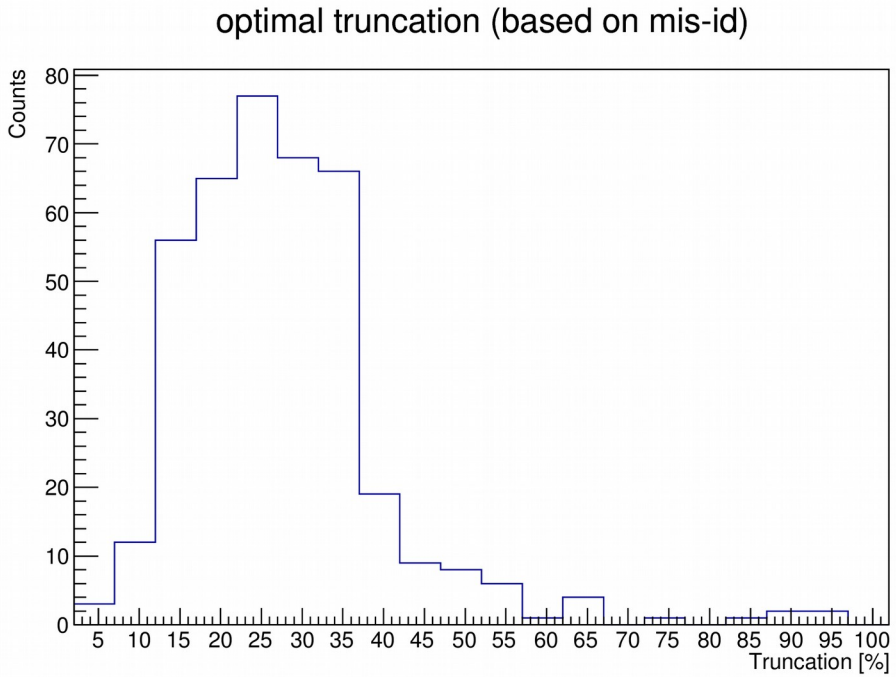


Mis-id

- 3rd method: optimal truncation ~25%

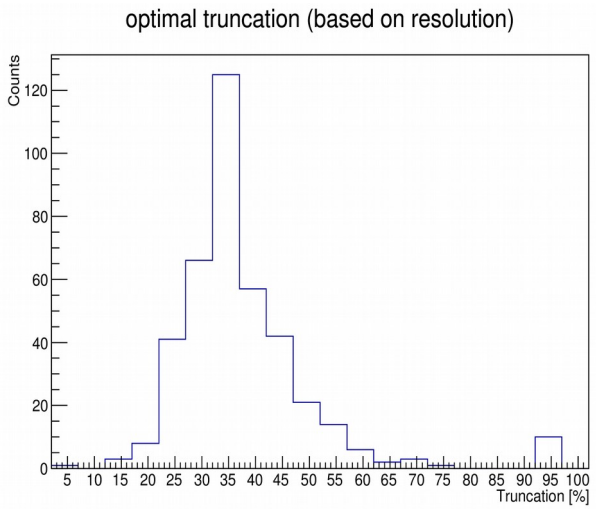


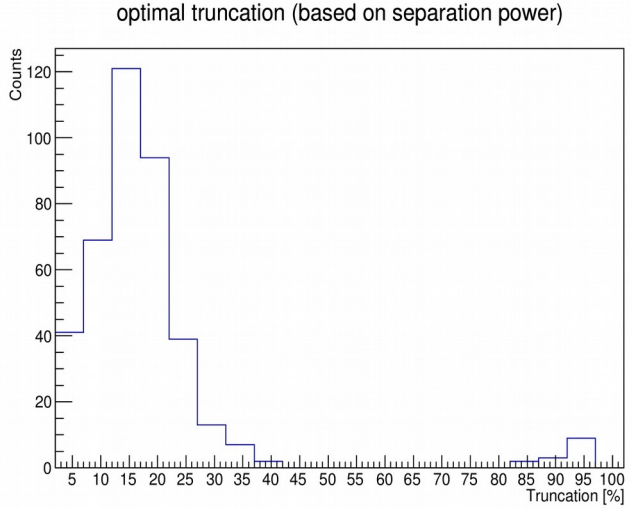


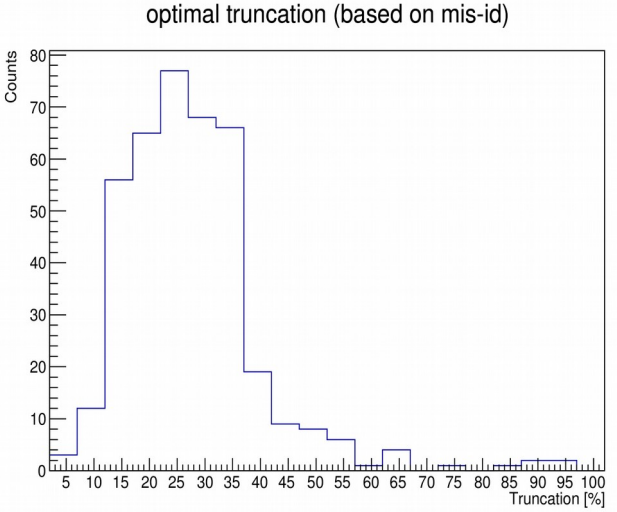


Results & perspectives

- The dE/dx Truncations found are different from the currently used one (50%).
- The dE/dx Truncation is different for each classifier.







Next:

- Study the optimal truncation in exclusive channels.
- Study the double truncation.