JGandalf Angular Resolution
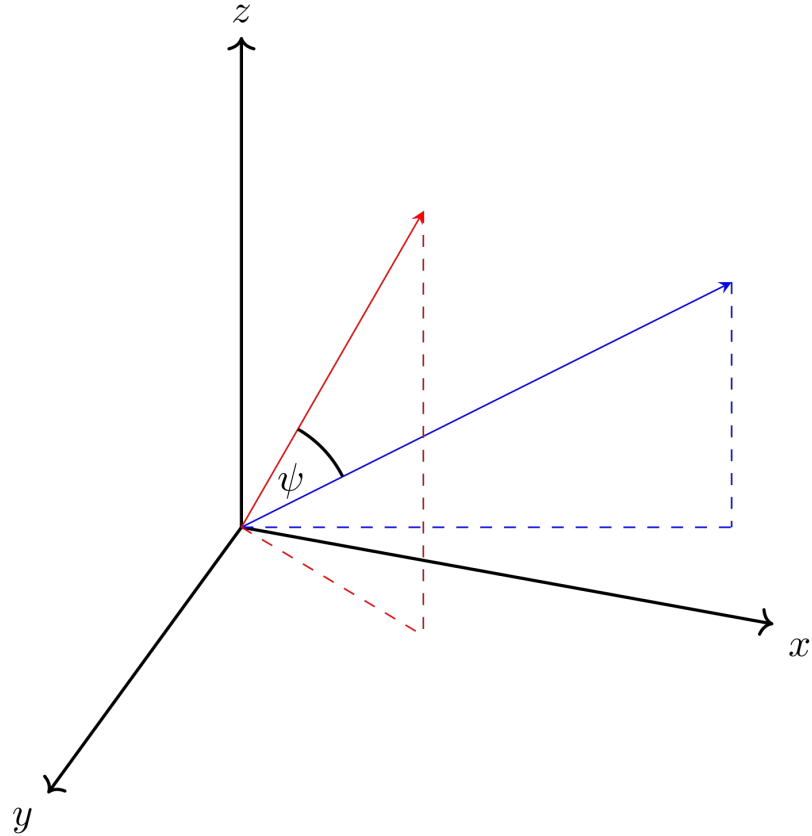
Max Briel 14/3/2019
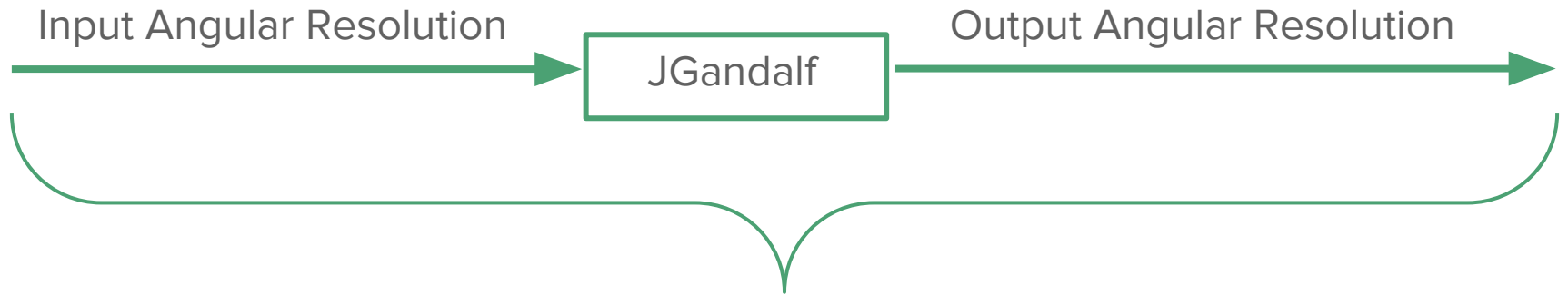
Angular resolution

Angle between
- Fitted track
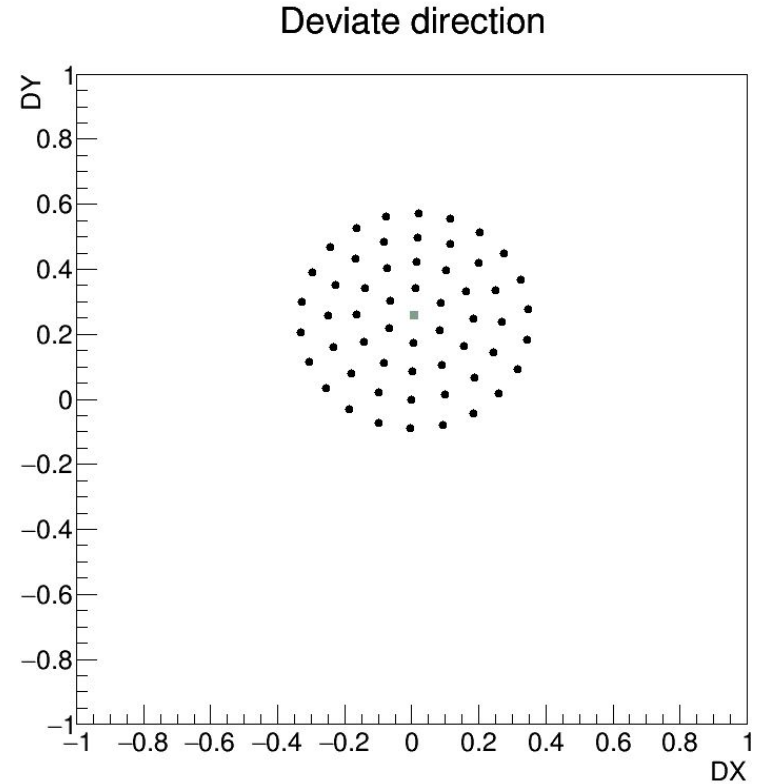- Monte Carlo Truth
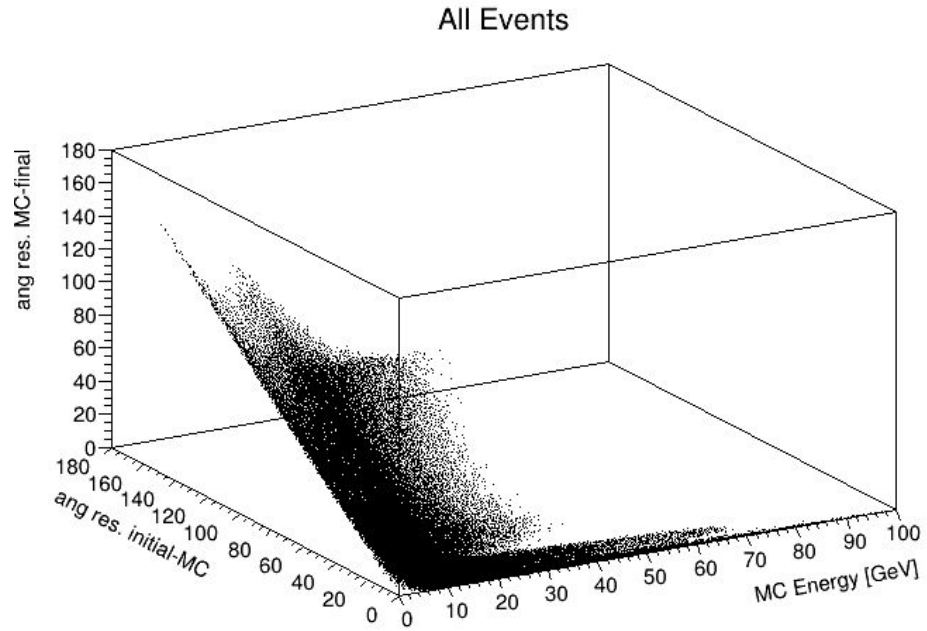
JGandalf Angular Resolution Check

Input Angular Resolution

JGandalf

Output Angular Resolution

Change over:

● Monte Carlo Energy
● # Hits

Initial idea

- Create deviates from the Monte Carlo Truth

- Didn't work
  - MC center off
  - Dependent on rotation point

- Instead fits from JPrefit & JSimplex
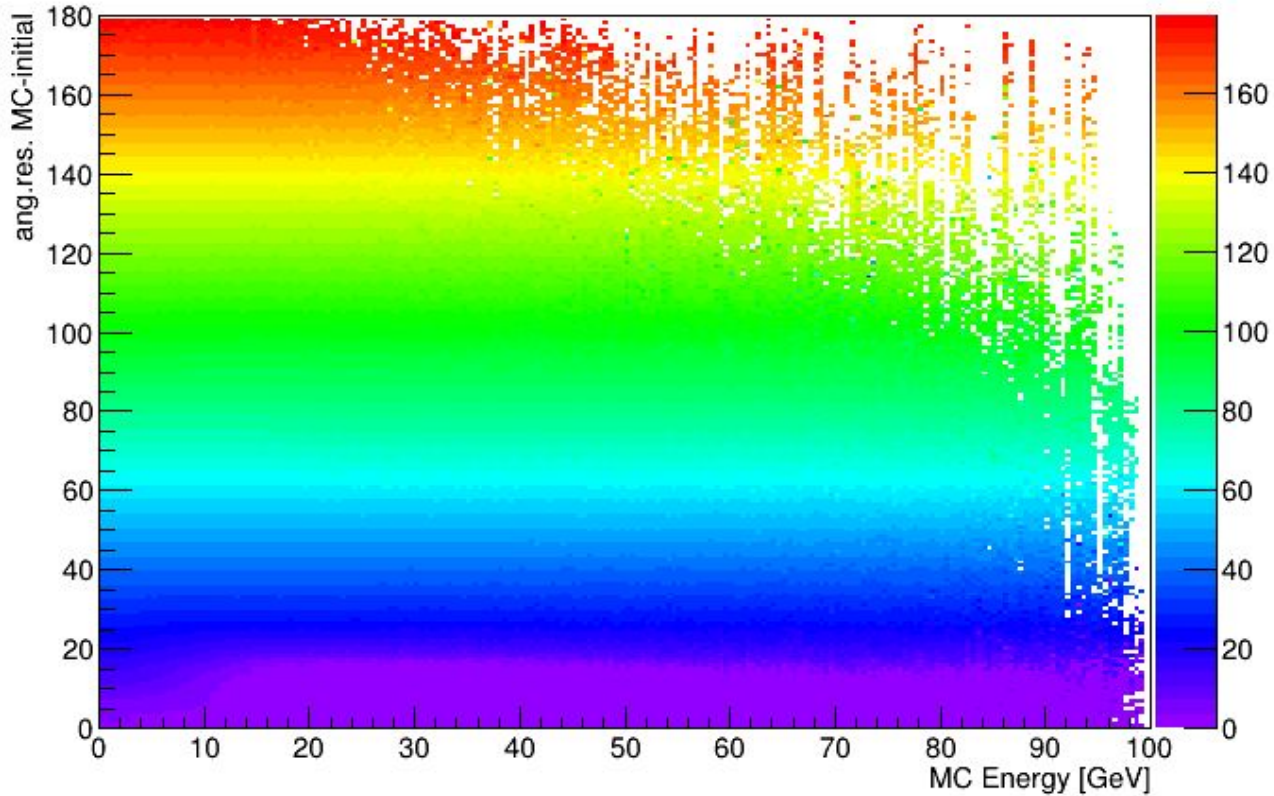

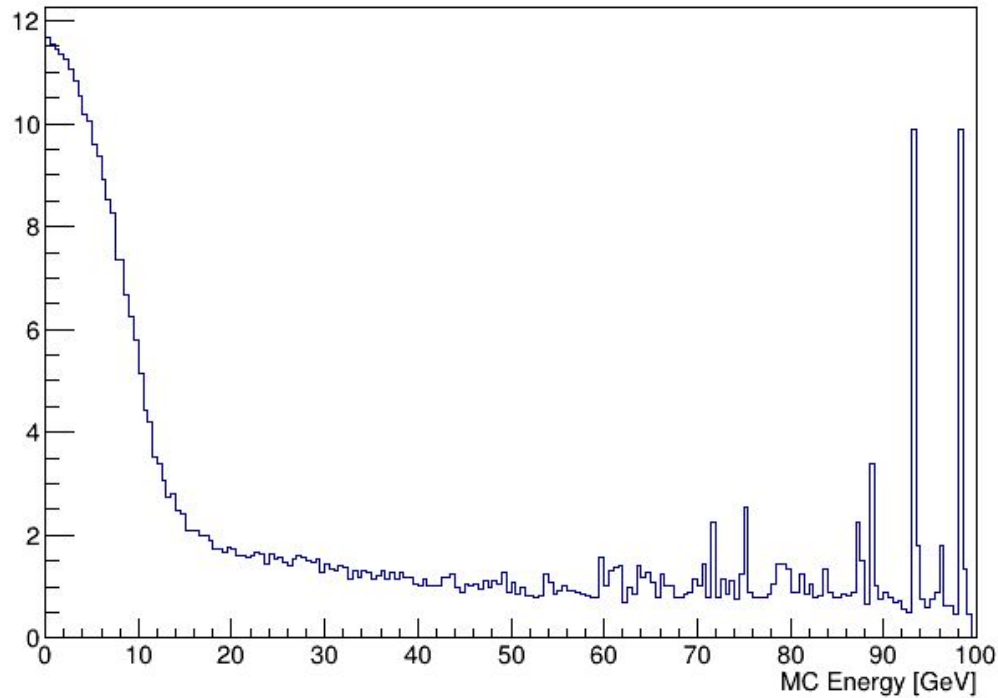Deviate direction

JGandalf; MC Energy; 3D

JGandalf; MC Energy; 2D Median
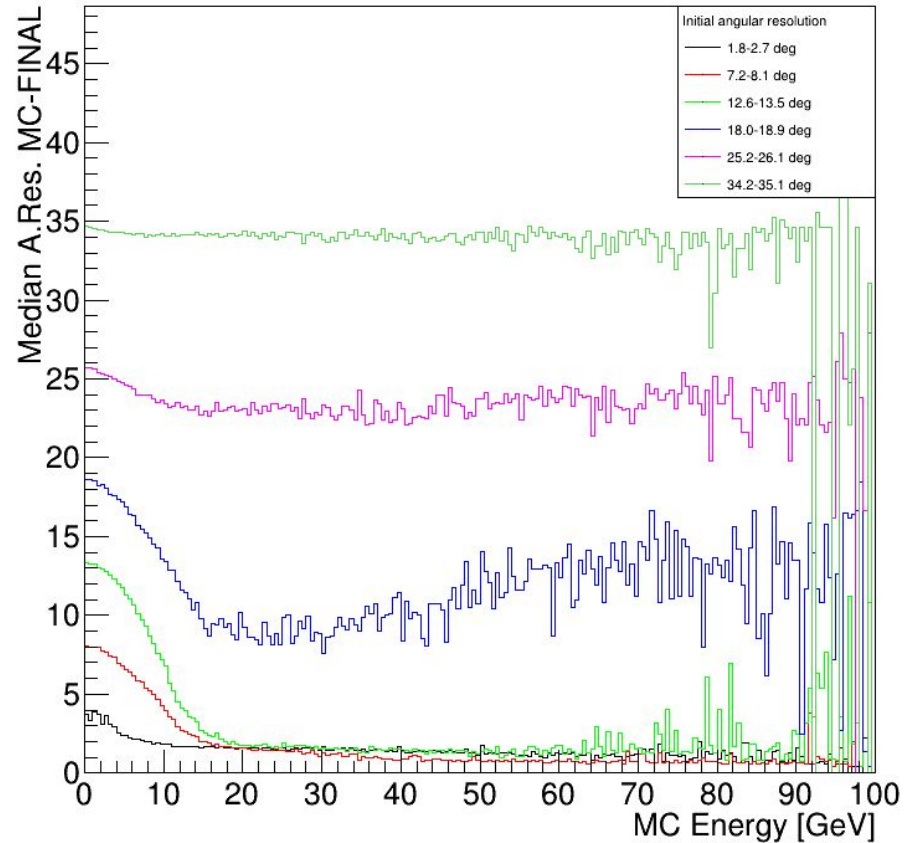

median surface (MC-final)

JGandalf; MC Energy; Median slice
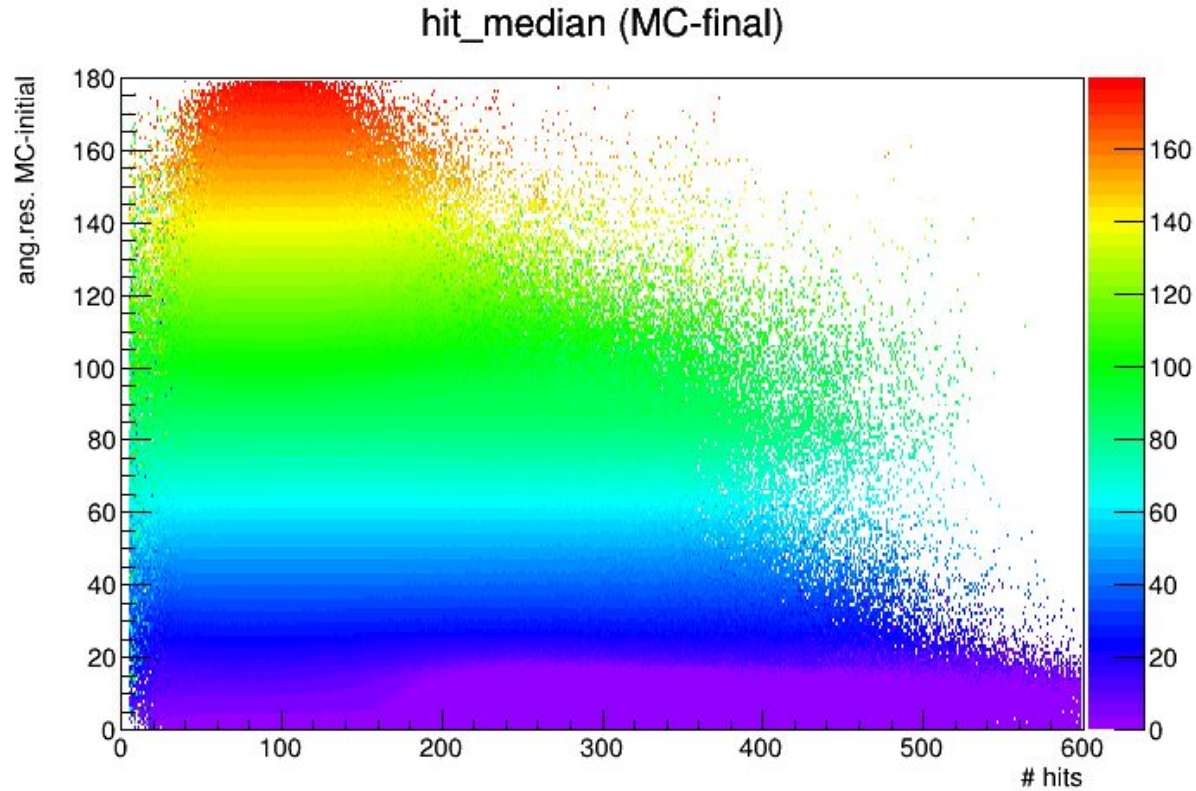

median at initial angular res: 10.80-11.70
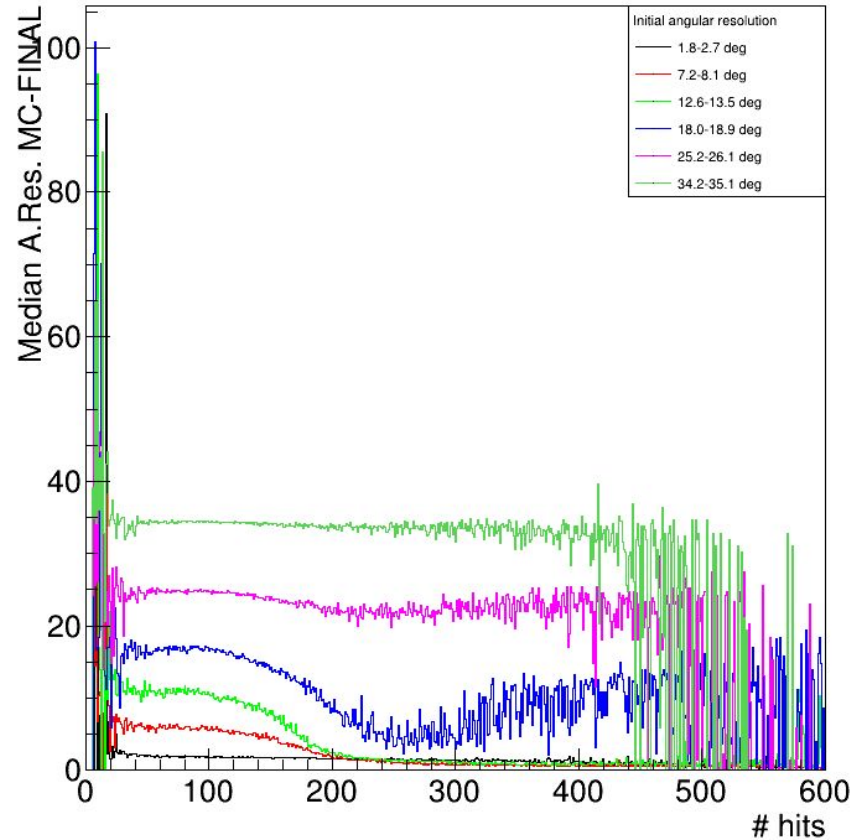
JGandalf; MC Energy; Median multiple slices

median angular res

JGandalf; # hits; 2D Median

hit_median (MC-final)

JGandalf; # hits; Median multiple slices

median angular res hits

Conclusion

- Input angle for JGandalf: $< 15^{\circ}$

- Direction reconstruction is MC Energy / #hits independent (if input below $< 15^{\circ}$)
  - above 20 GeV
  - Or above 200 hits

- So: What could be the consequences for reconstruction be?
  - More hits in tracks ⟶ Less tracks necessary to get a good fit?