

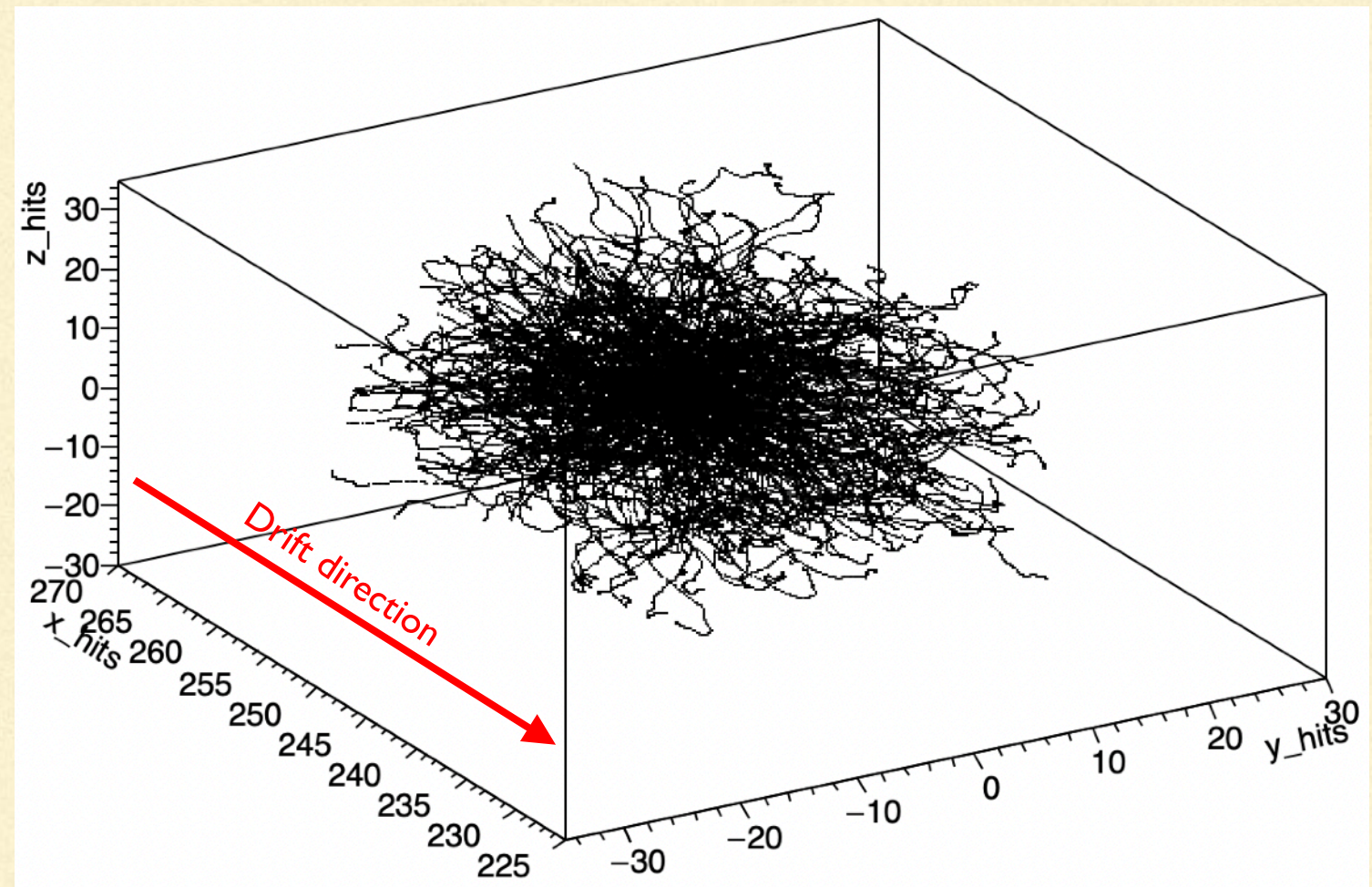
Update on directionality of low energy electron recoil

S.Torelli - E. Baracchini

Dataset

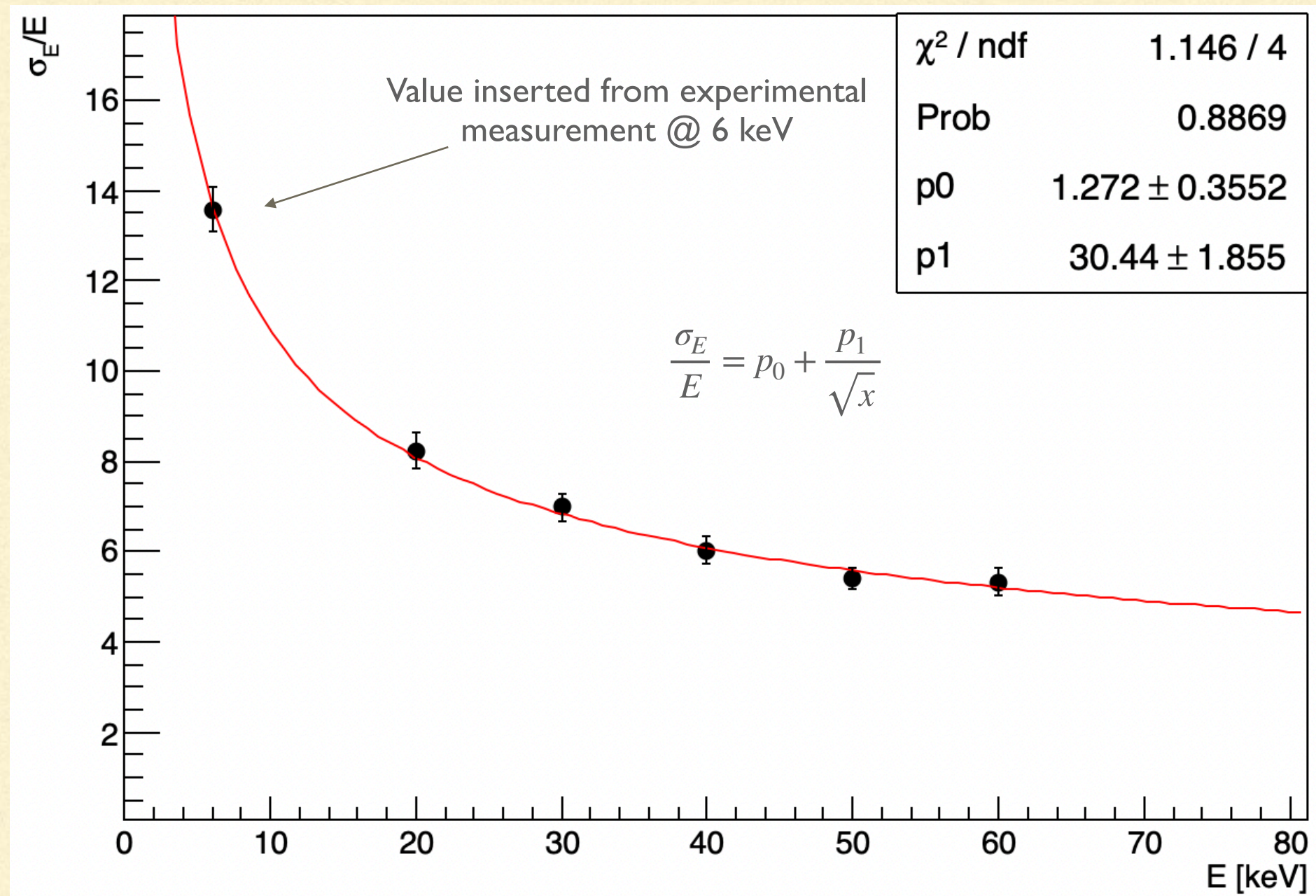
- Data has been produced isotropically at the center of the detector
- Each track has been digitized with a random z within 5 cm and 45 cm

↓
(worse possible conditions)



- 500 track per Energy ranging from 20 keV to 60 keV with step of 2 keV
- Track merged 18-20-22, 24-26, 28-30-32, 34-36, 38-40-42, 44-46, 48-50-52, 54-56, 58-60

Energy resolution

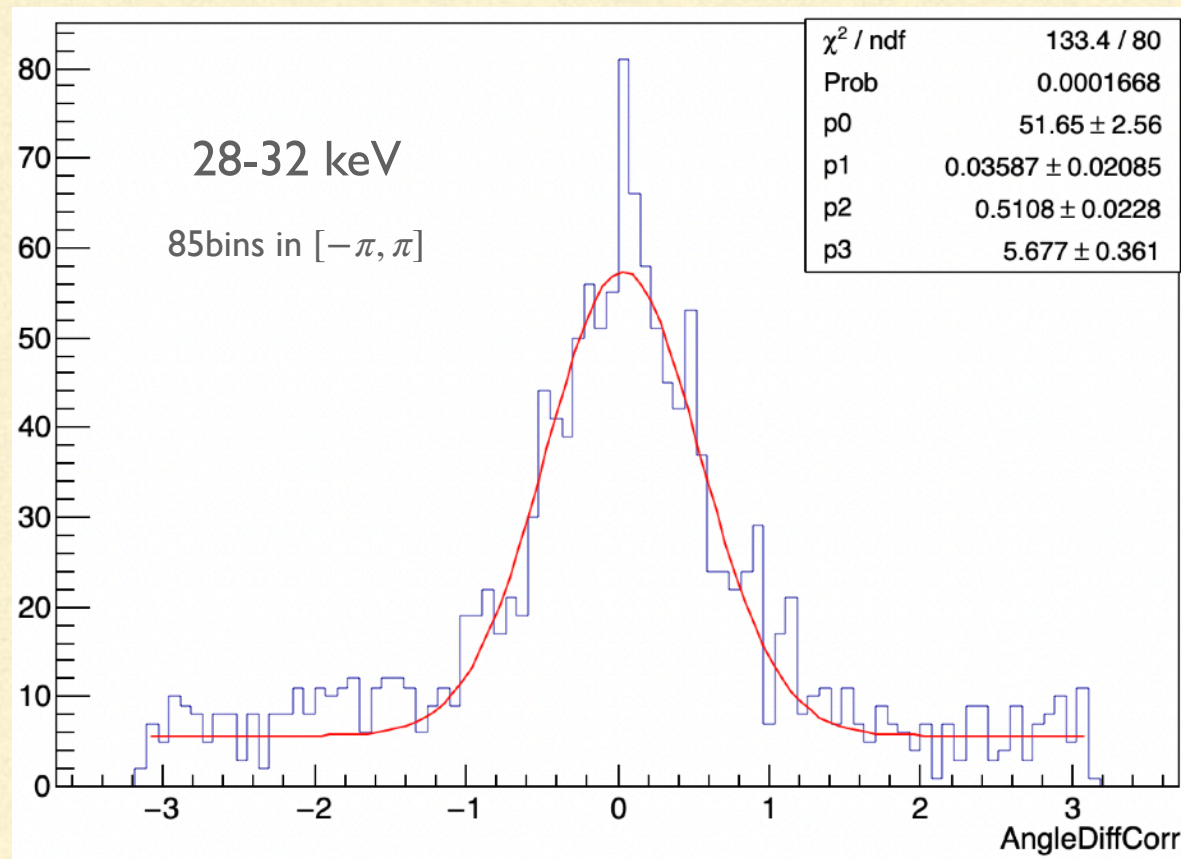
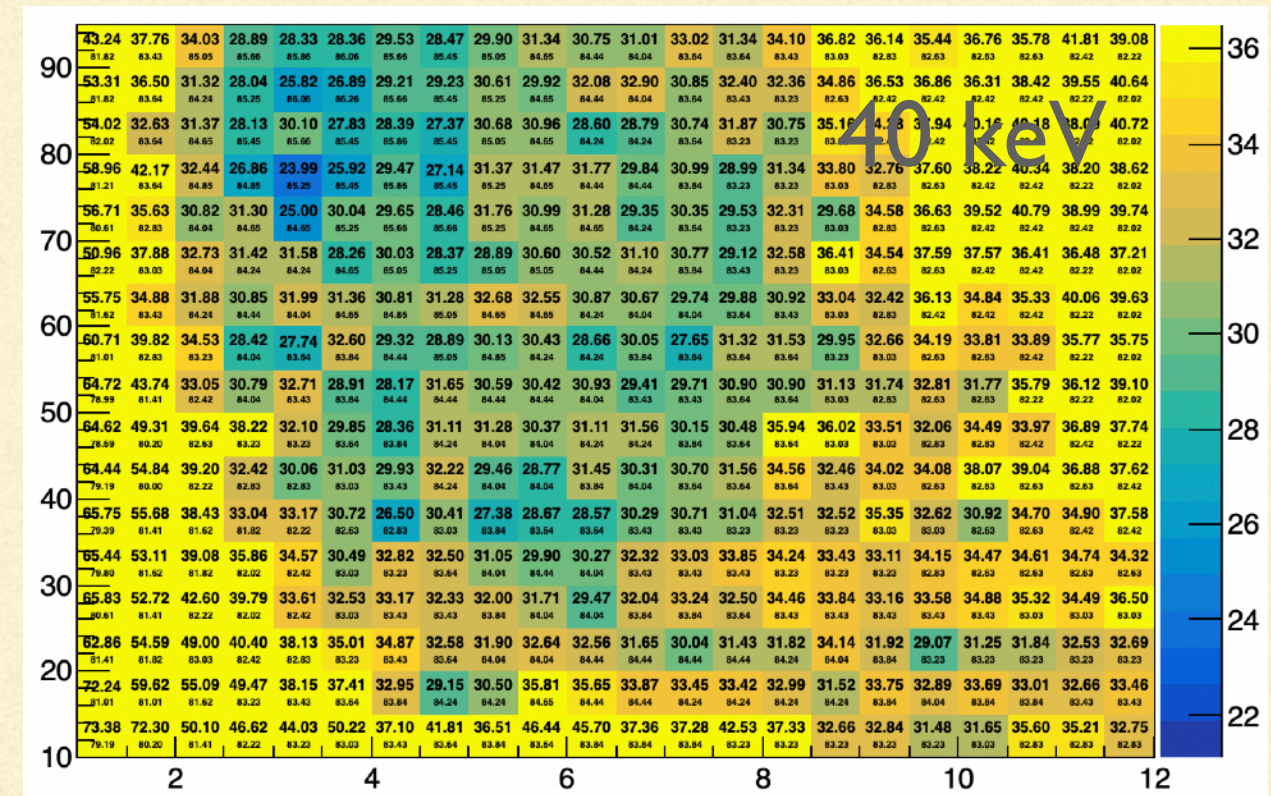


- Compatible with the typical resolution of a gas detector

Angular resolution parameters

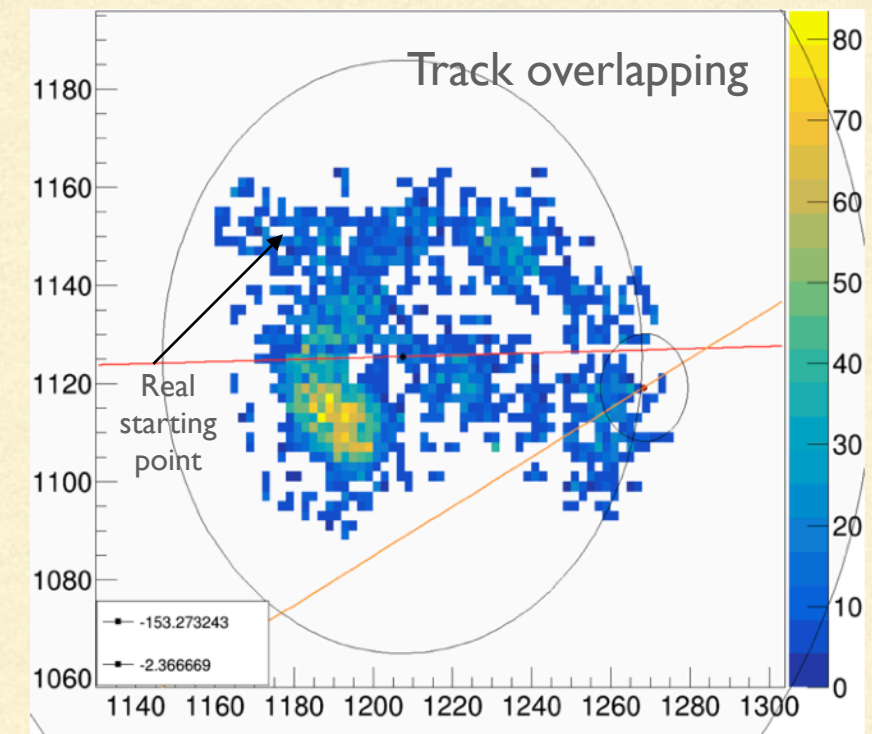
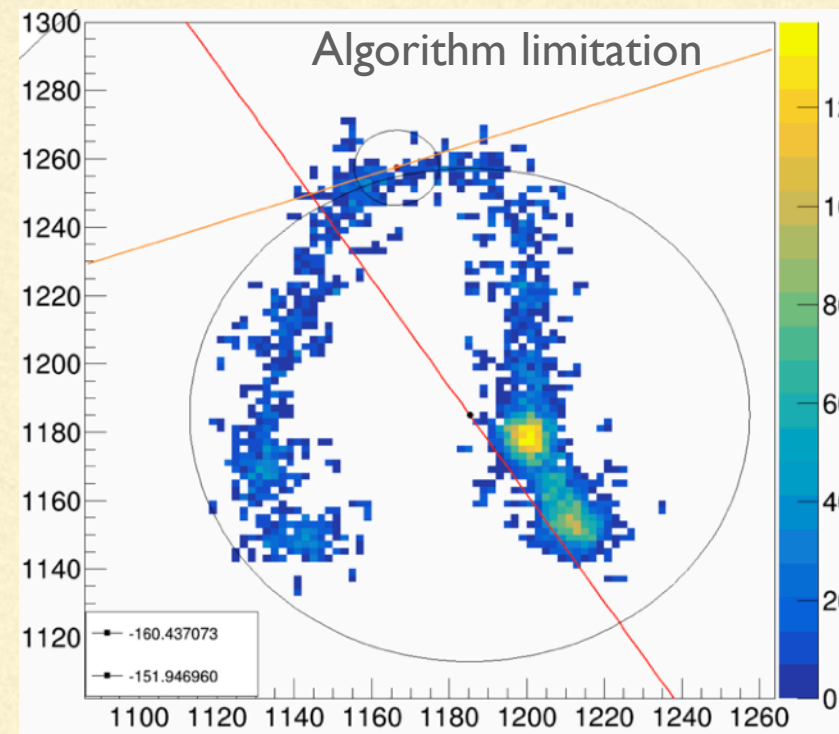
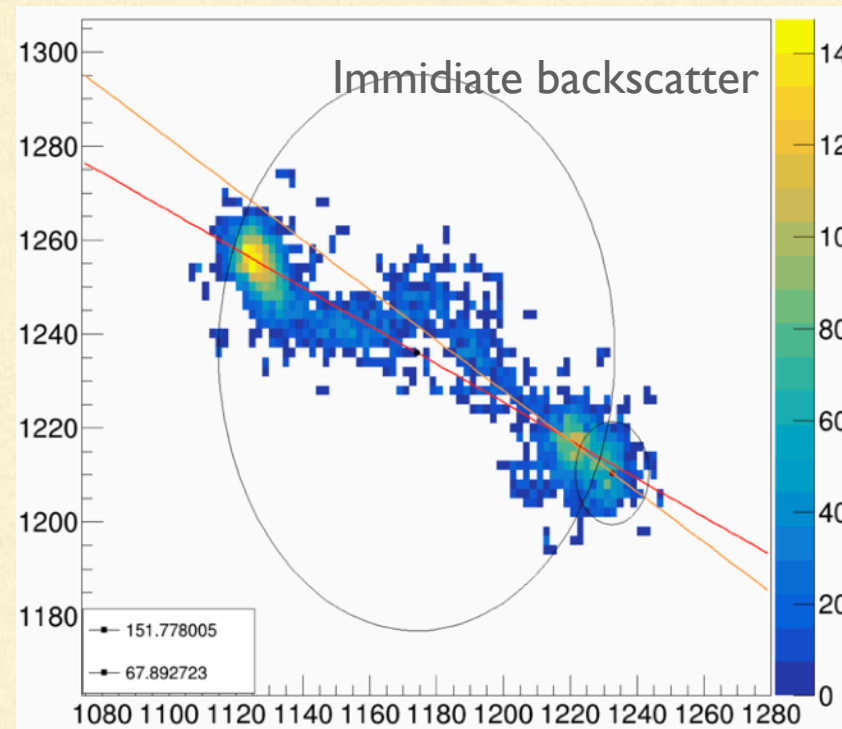
- Same parameters of the previous scan used

	20keV	30keV	40keV	50keV	60keV
w	1.5	2	3	3.5	6.5
NPIP	60	70	75	80	45



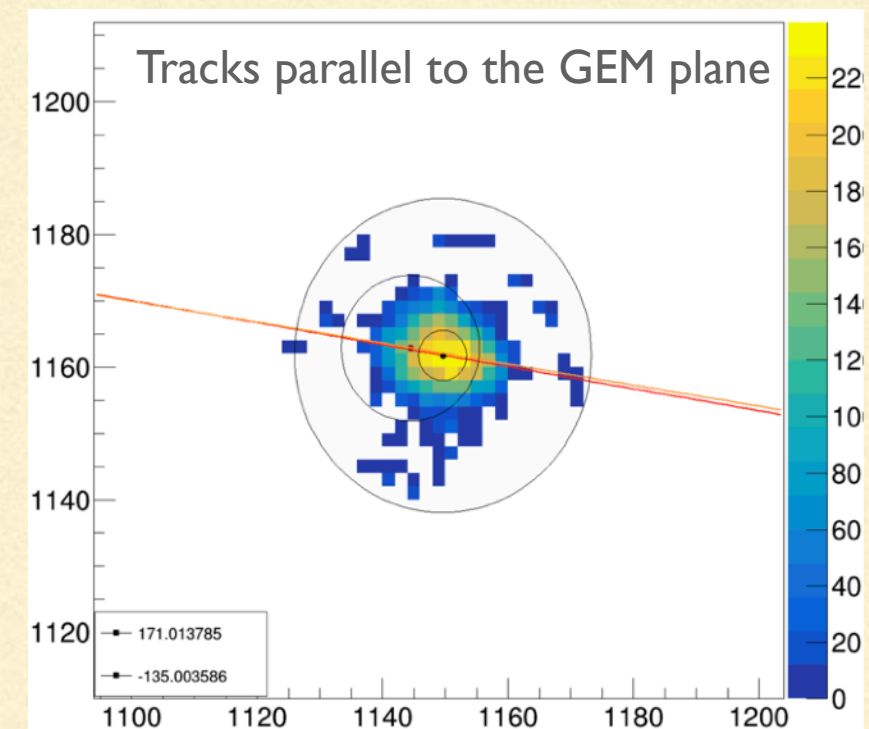
- Resolution distribution fit with a gaussian + a flat component (p3)
- Must be taken into account in future studies

Causes of the flat component



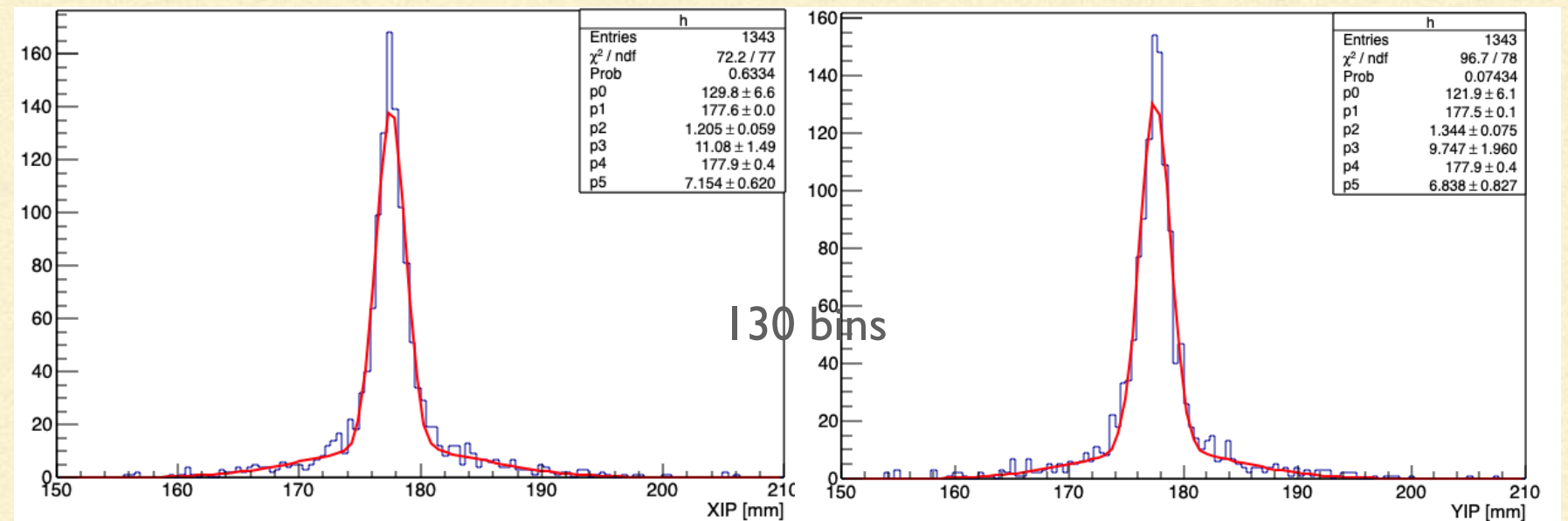
In all this cases the algorithm reconstruct a random direction (flat distribution)

The first three cases have in common a wrong IP

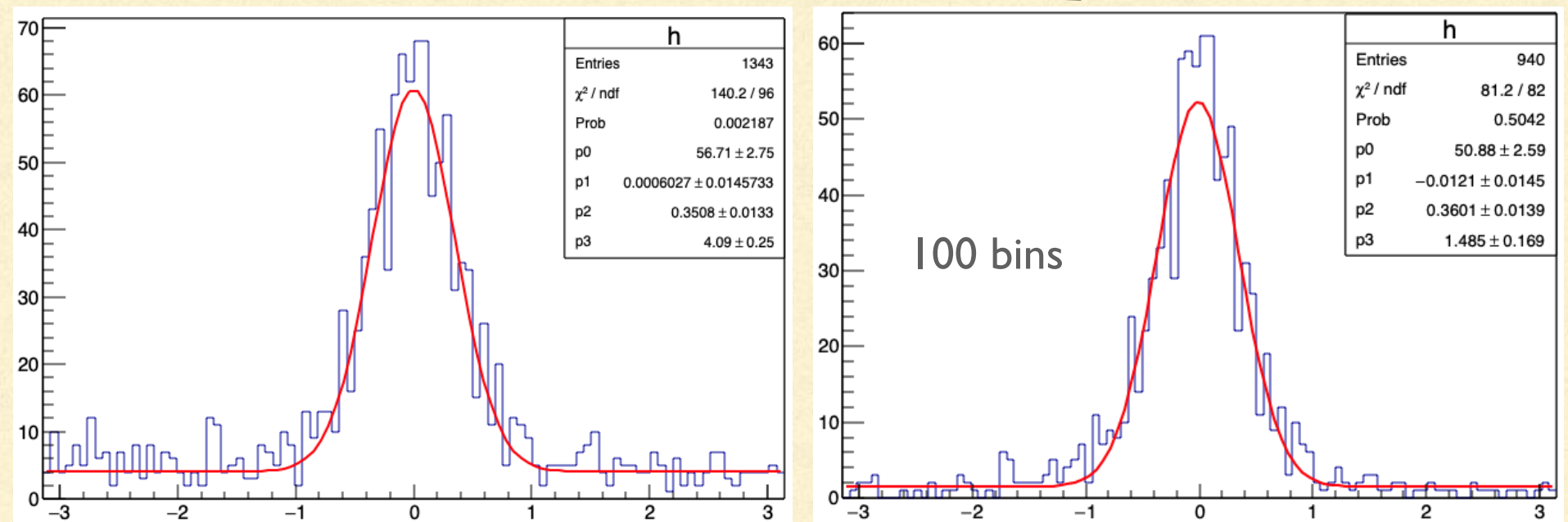


Influence of IP reconstruction @ 60 keV

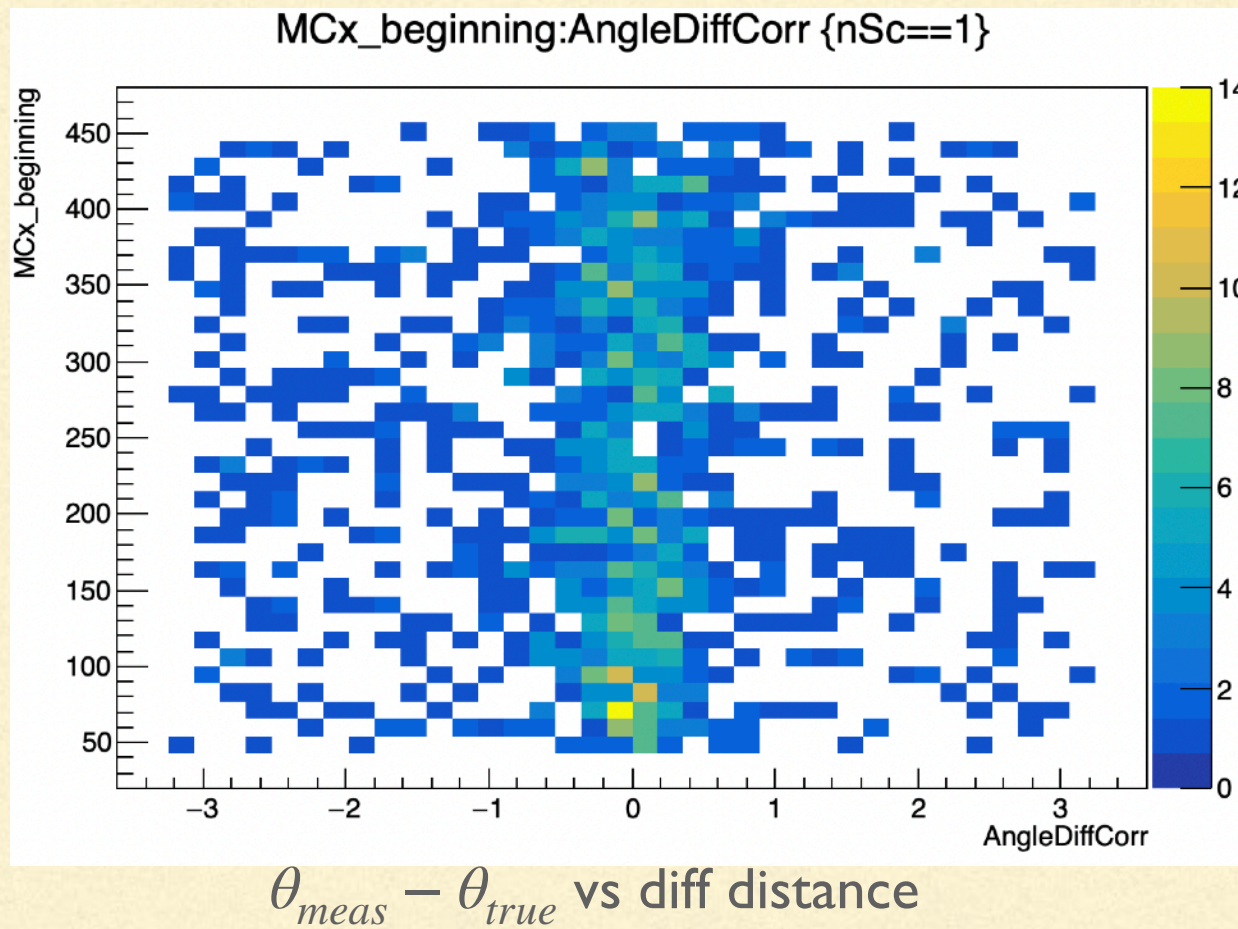
- IP resolution fitted with two gaussian components
- Second component not present at lower energies
- Attempt to cut on IP to see if tails disappear
- Effectively the flat component reduces by a factor 2 respect to the total number of events
- No IP cuts:
 $4.09 * 100/1343 = 0.30$
- Cuts on IP:
 $1.48 * 100/940 = 0.15$



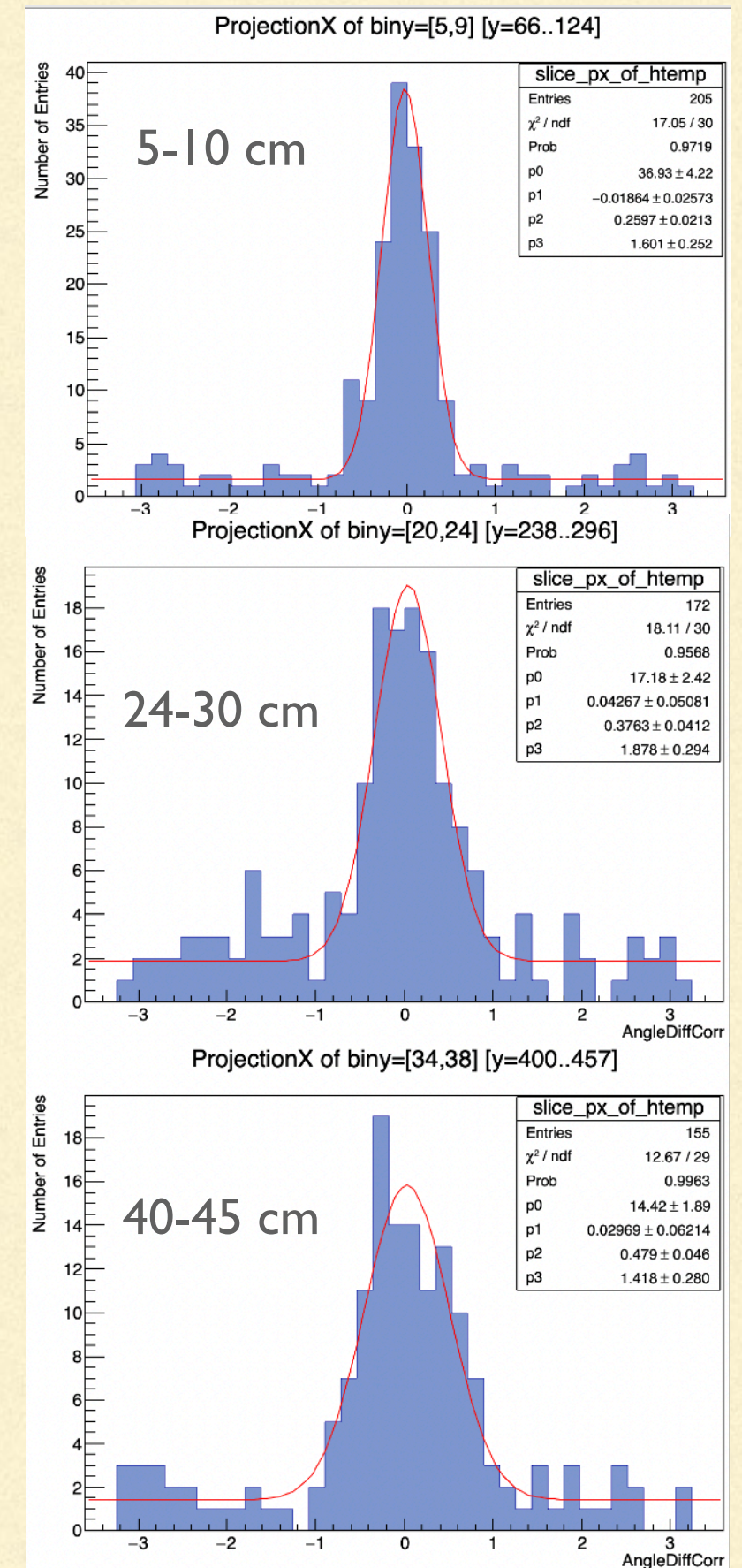
Cuts within 3σ of the main gaussians



AngRes Vs Drift dist. @ 60 keV



- Angular resolution improves lowering the drift distance
- Flat constant component present in the same amount at all the drift distances



Results on angular resolution

- Sigma of the gaussian of angular distribution
- For intermediate values the average of the neighbours energy parameters have been used
- IP resolution worsening with respect the case with tracks along x
- 60 keV maybe due to the parameters

