3D hits from straws

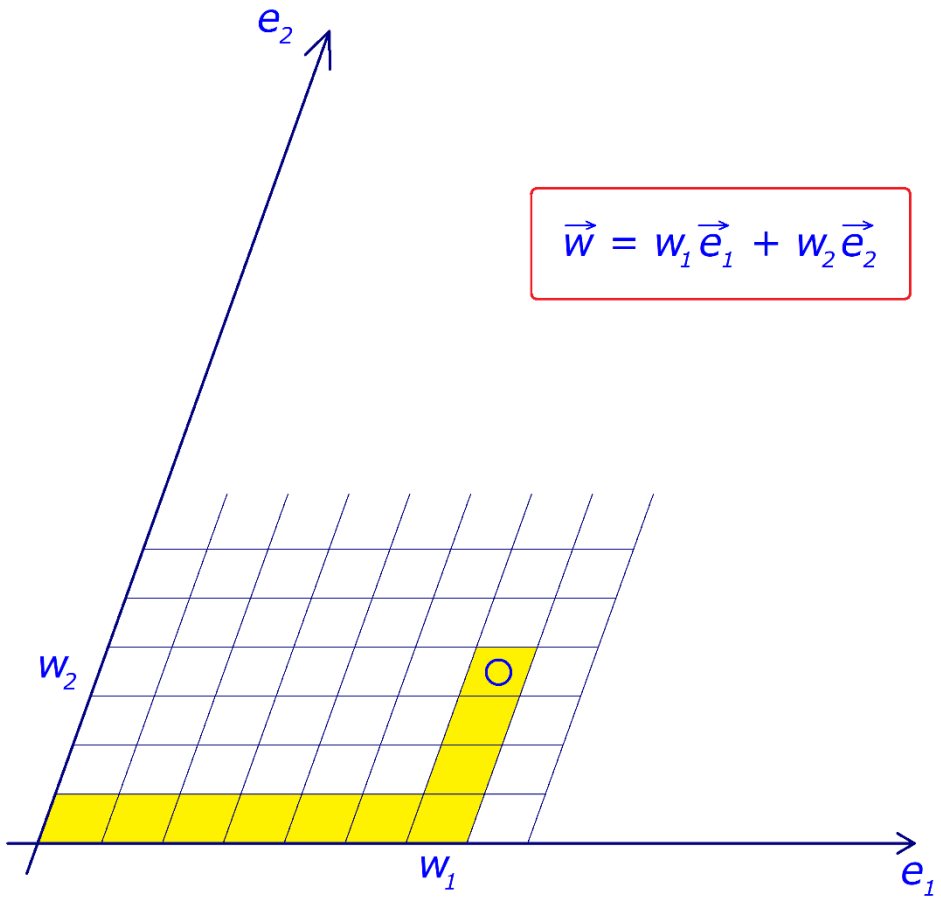
First attempt

Contents

Contents

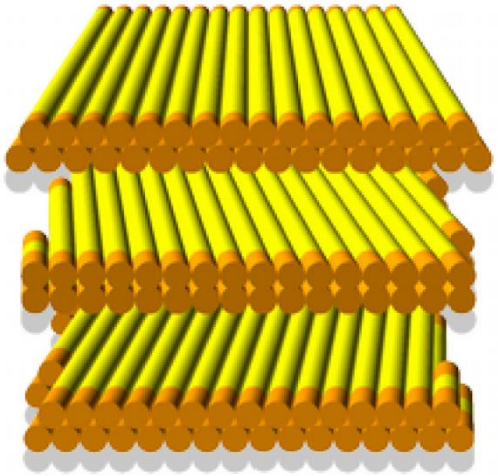
Traditional system

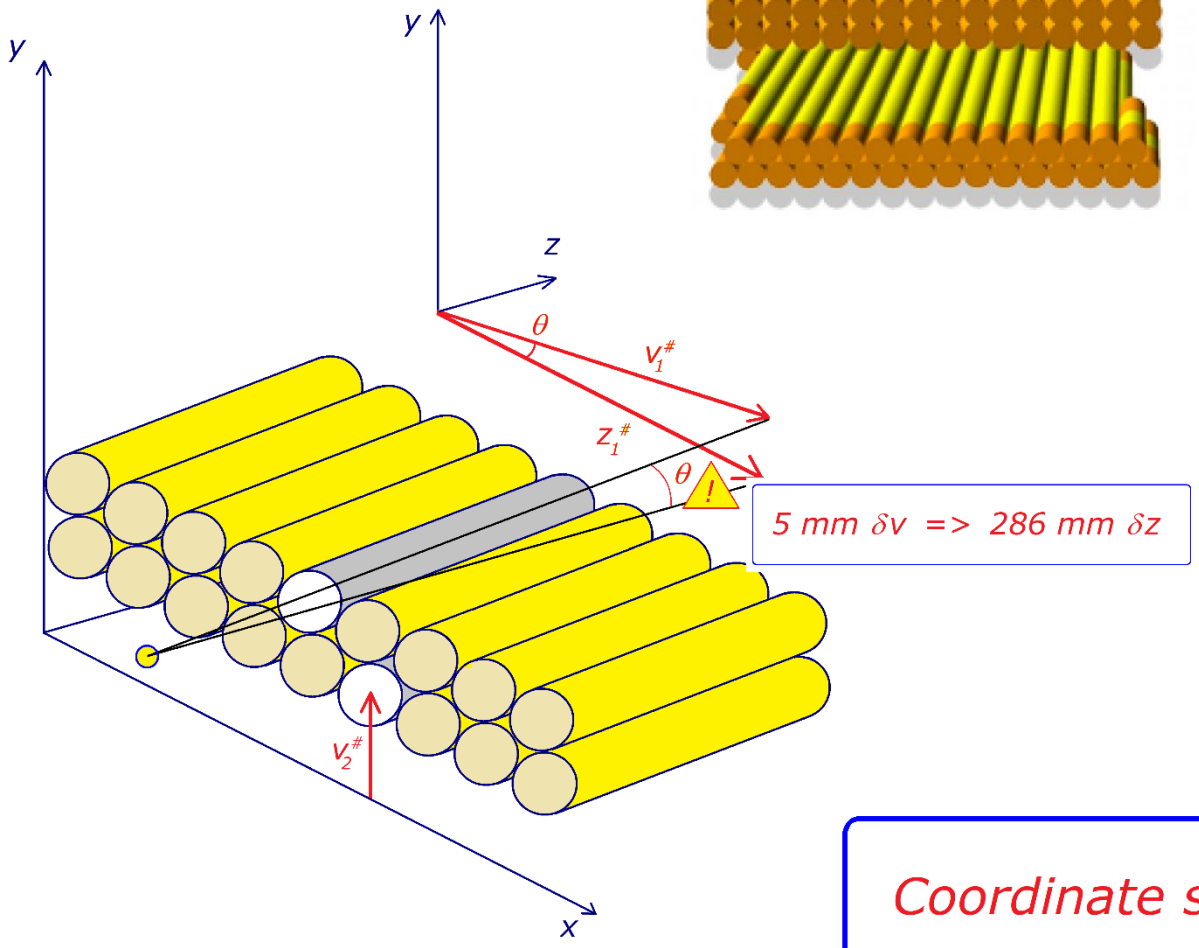
- use grid
  - navigate along axes



Straw system

- use straw directions
  - navigate perpendicular to straw





- reconstruct hit

Coordinate system

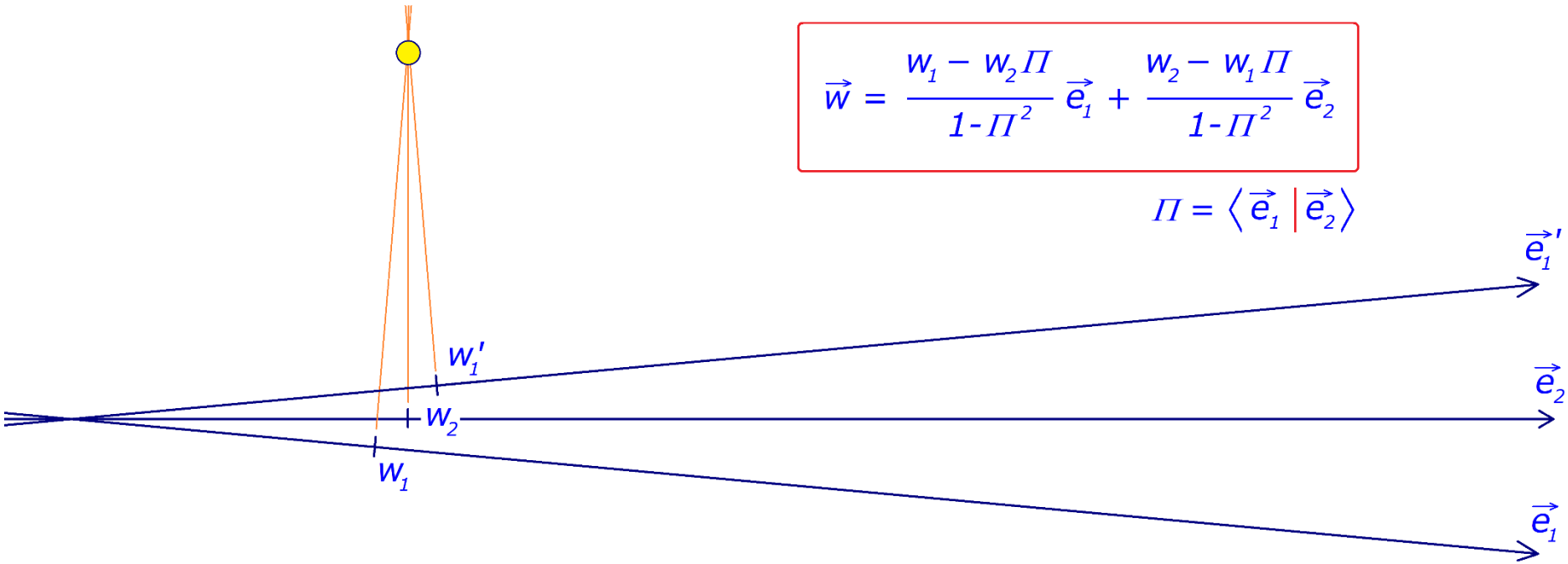
Straw system

- use straw directions

  - navigate perpendicular to straw

$$\vec{w} = \frac{w_1 - w_2 \Pi}{1 - \Pi^2} \vec{e}_1 + \frac{w_2 - w_1 \Pi}{1 - \Pi^2} \vec{e}_2$$

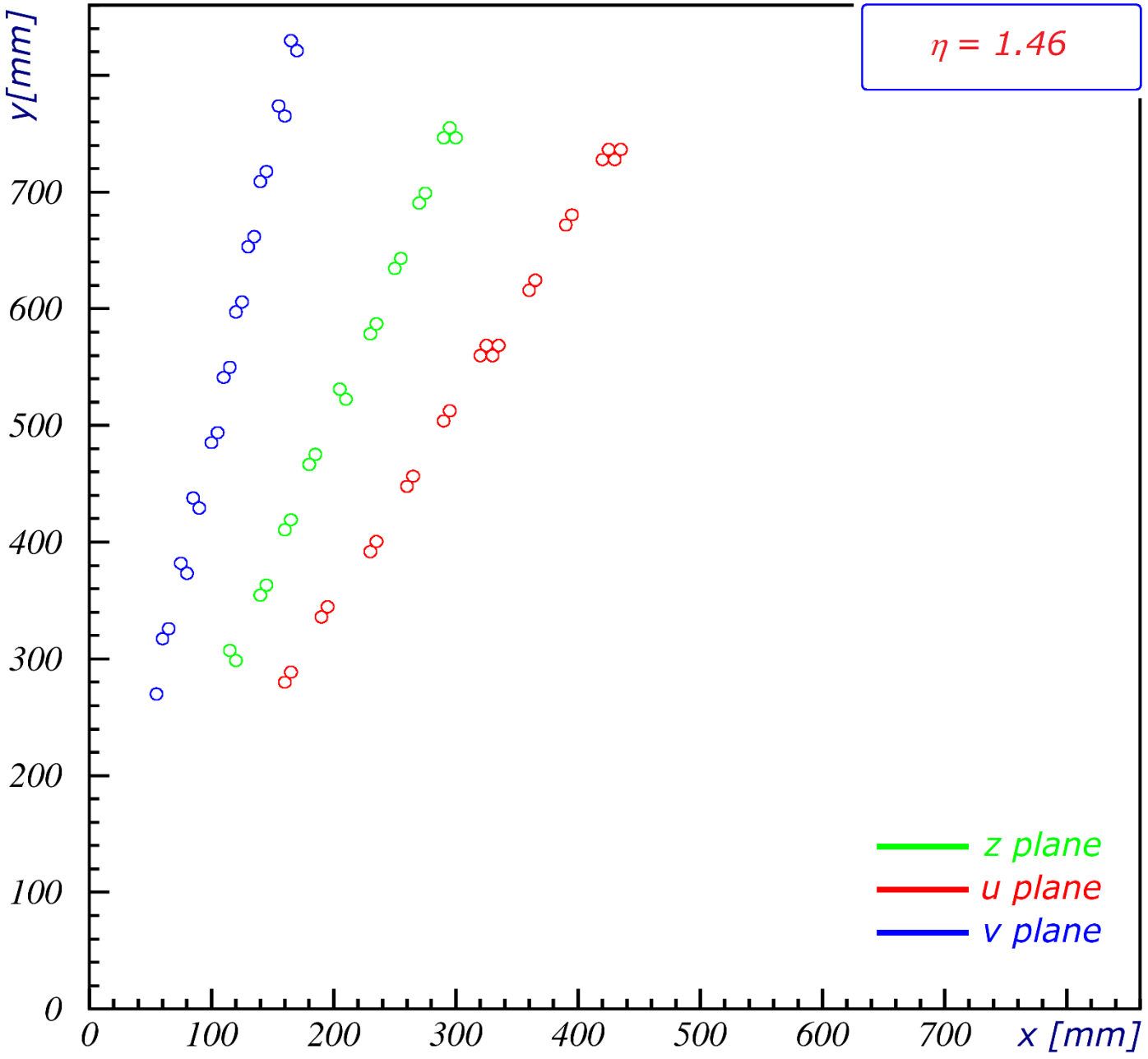
$$\Pi = \langle \vec{e}_1 \mid \vec{e}_2 \rangle$$



Contents

Mini straw simulation

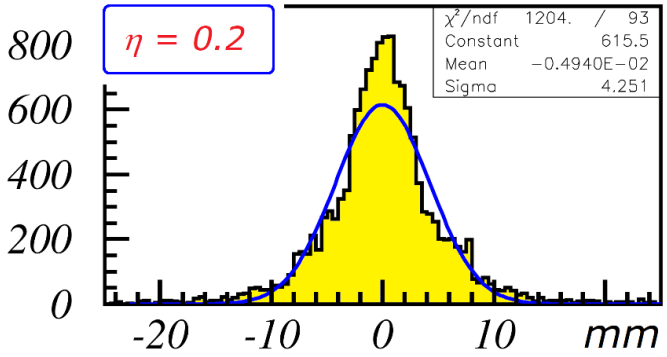
- minimal idea
- zuv 2-layers
- general behavior
- test aspects that cannot in SPDroot

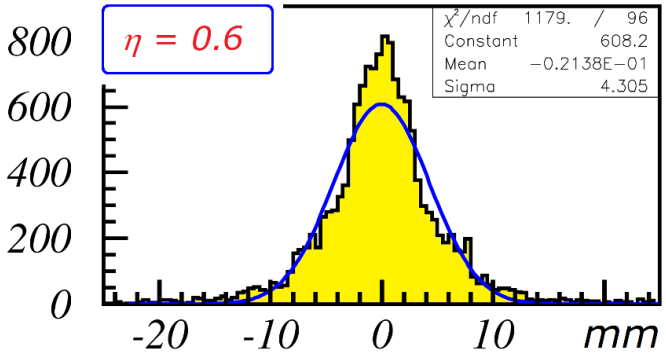


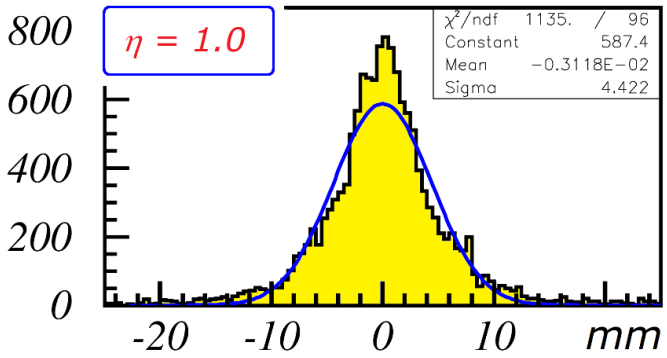
Contents

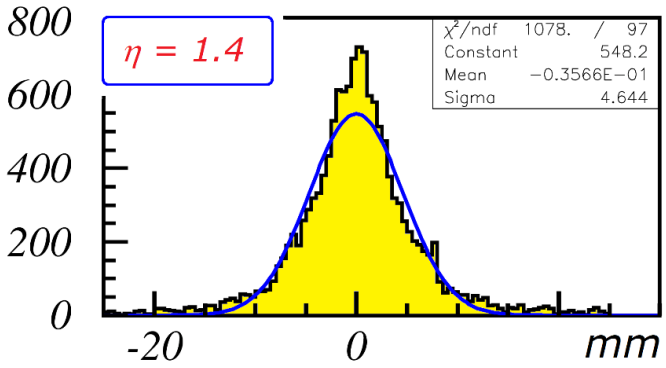
x-Resolution

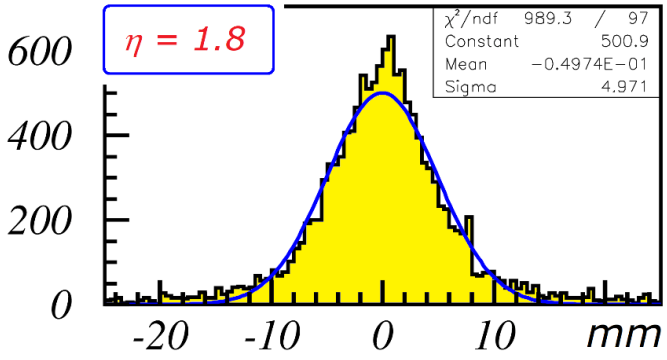
- in the expected 4-5 mm range











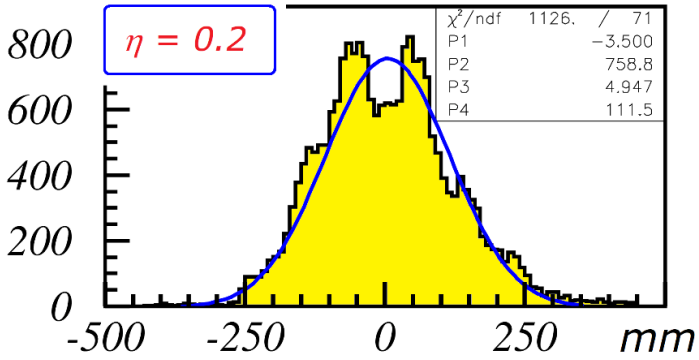
x-Resolution vs. pseudorapidity

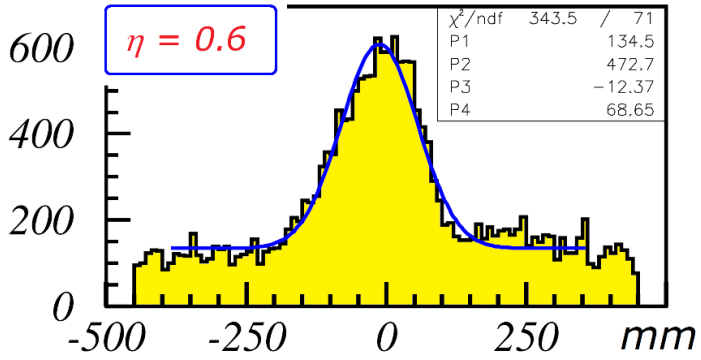
±0.2 intervals

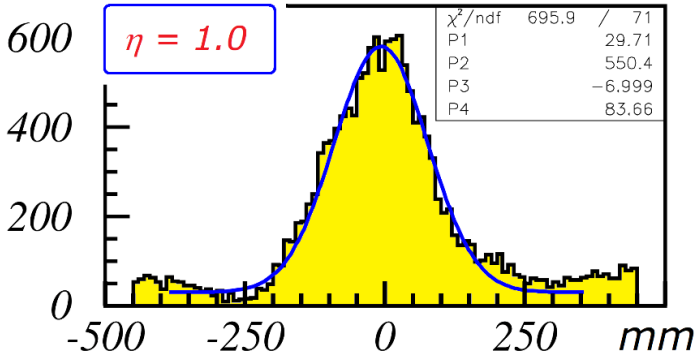
SPD

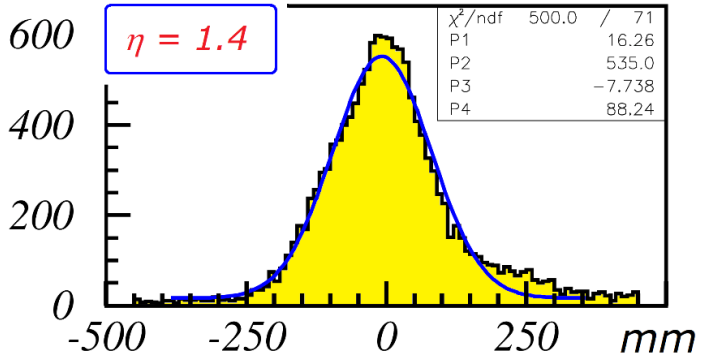
z-Resolution

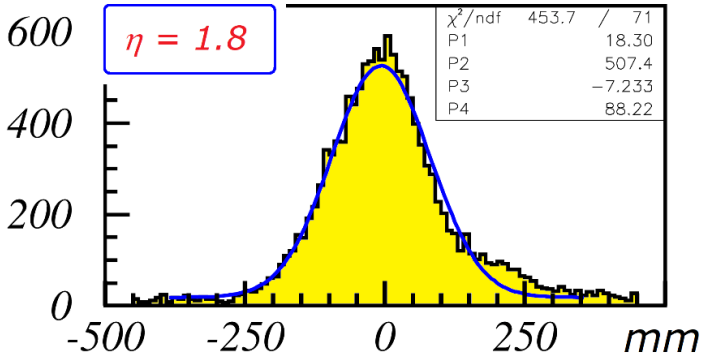
- 90 mm < 250 mm expected











SPD

Mihai-Tiberiu Dim

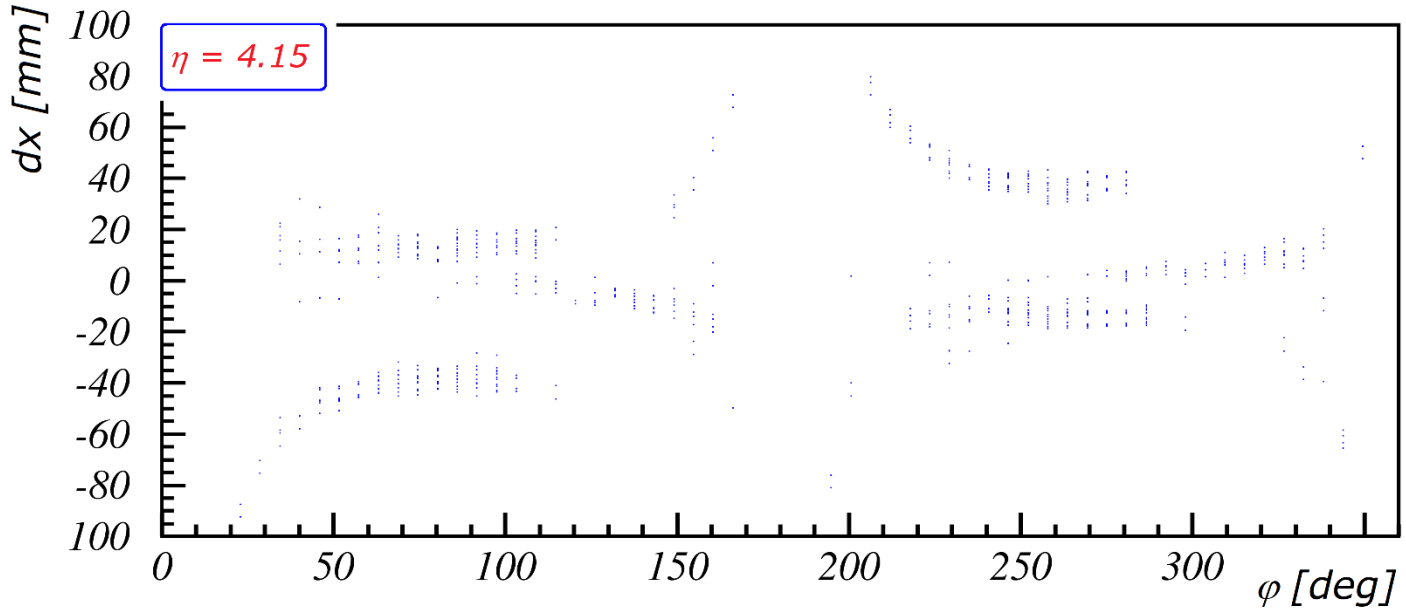
z-Resolution vs. pseudorapidity

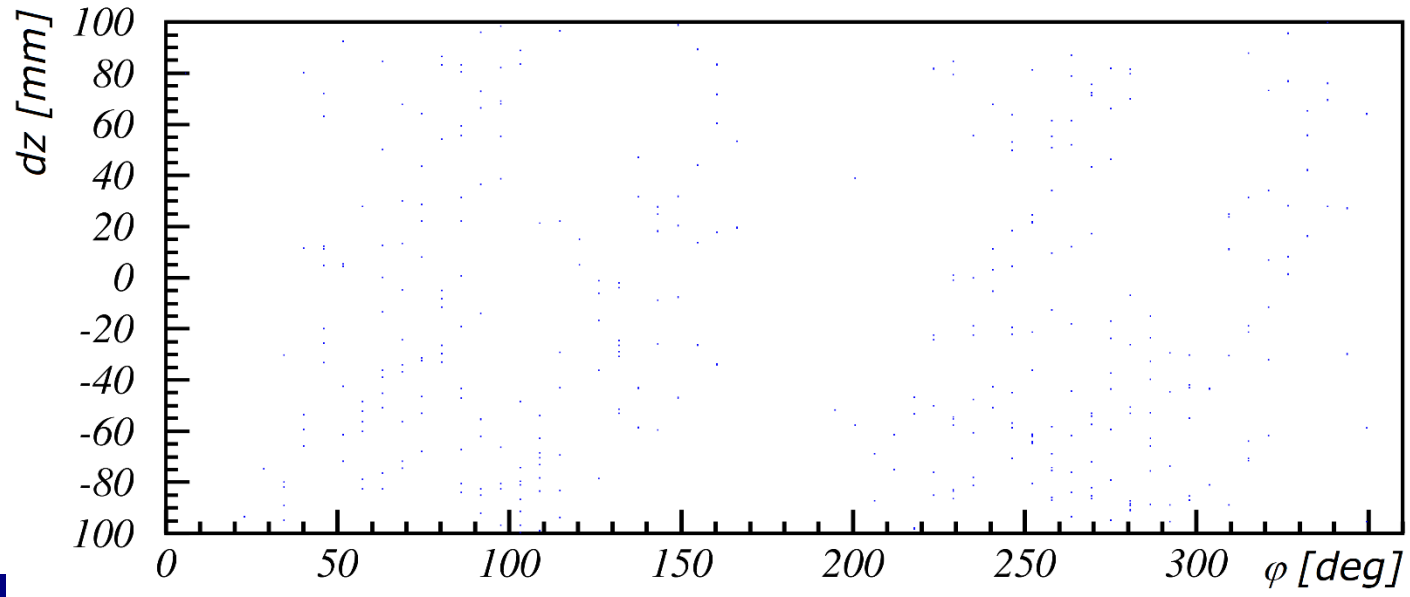
±0.2 intervals

Resolution vs. φ

- can see some structure

- exact structure depends on SPD-root simulation





Contents

Conclusions

3D point reconstruction

- possible …
- but need to think how to include more straws
- for better resolution

Forward

- better resolution = t_0 … (x 10-30 better)
- working on HLX trk-2-straw DOCA

Спасибо !