

All files are present on “/hera/hades/user/jbiernat/pionsim/pion_generator_export”

// PION BEAM HADES

Number of pions in start detector:

Simulation settings:

X&Y 0.5mm

Thete/phi -> 10 mrad/50 mrad

dp = +- 6%

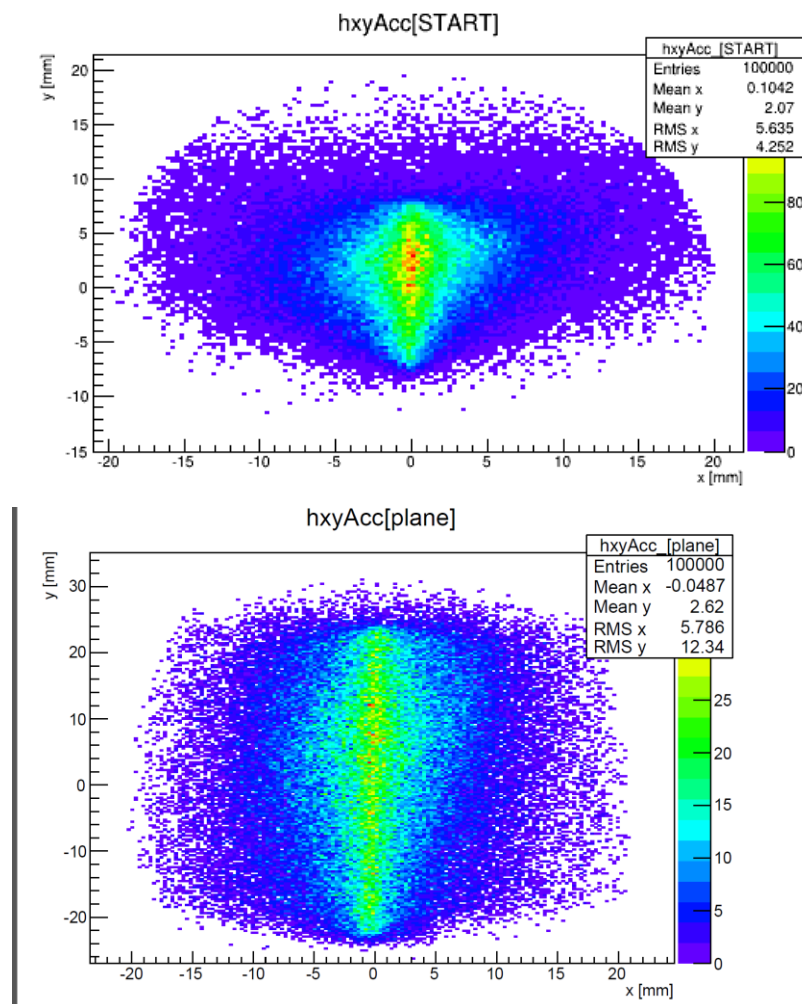
START = - 380 mm

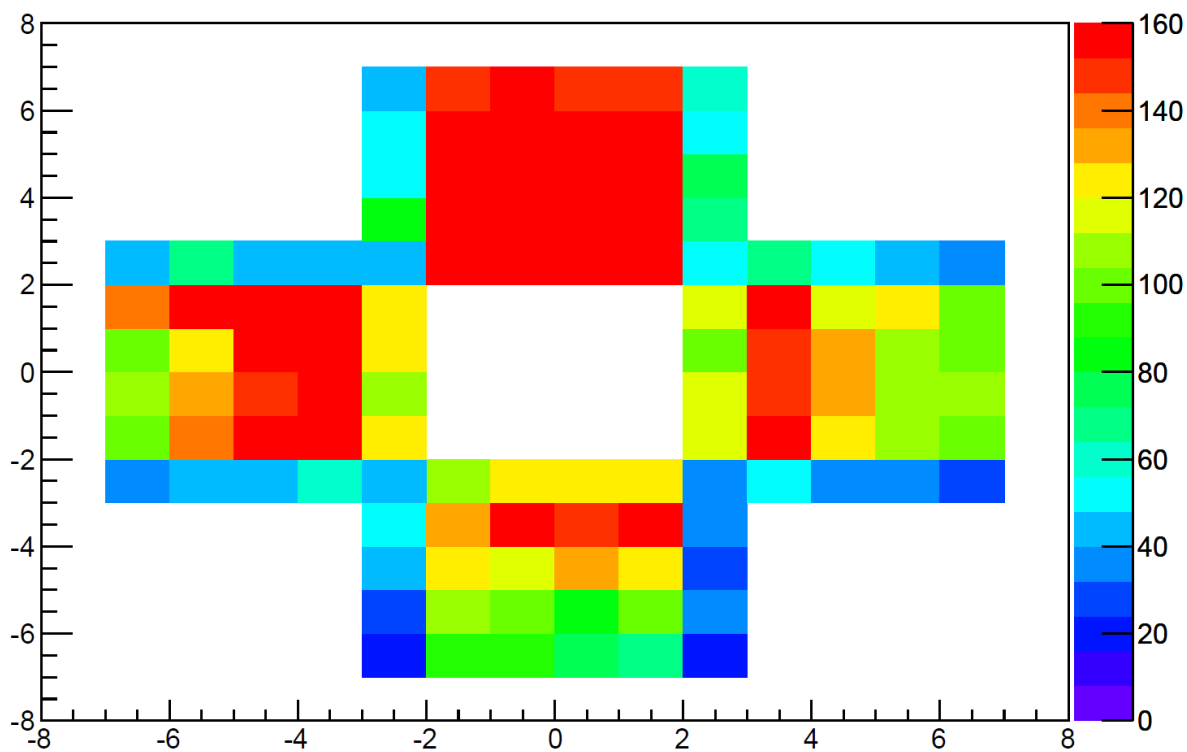
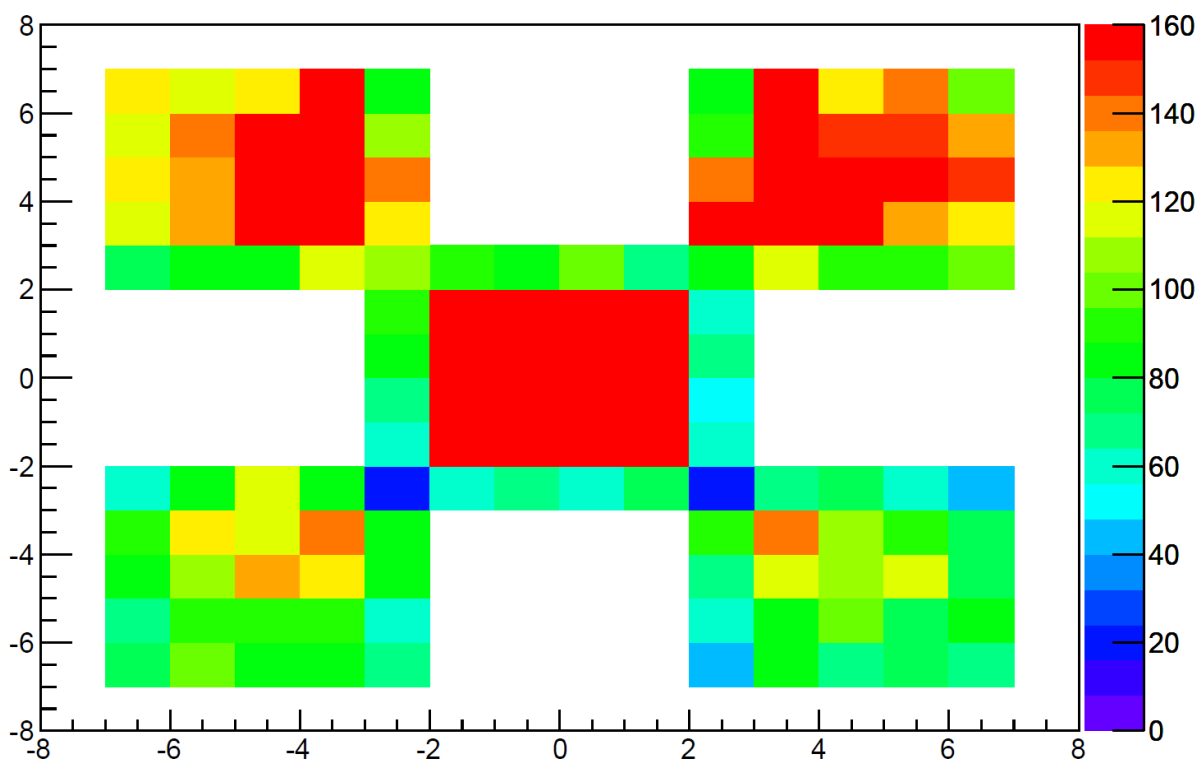
pion emission PLANE = 1200 mm

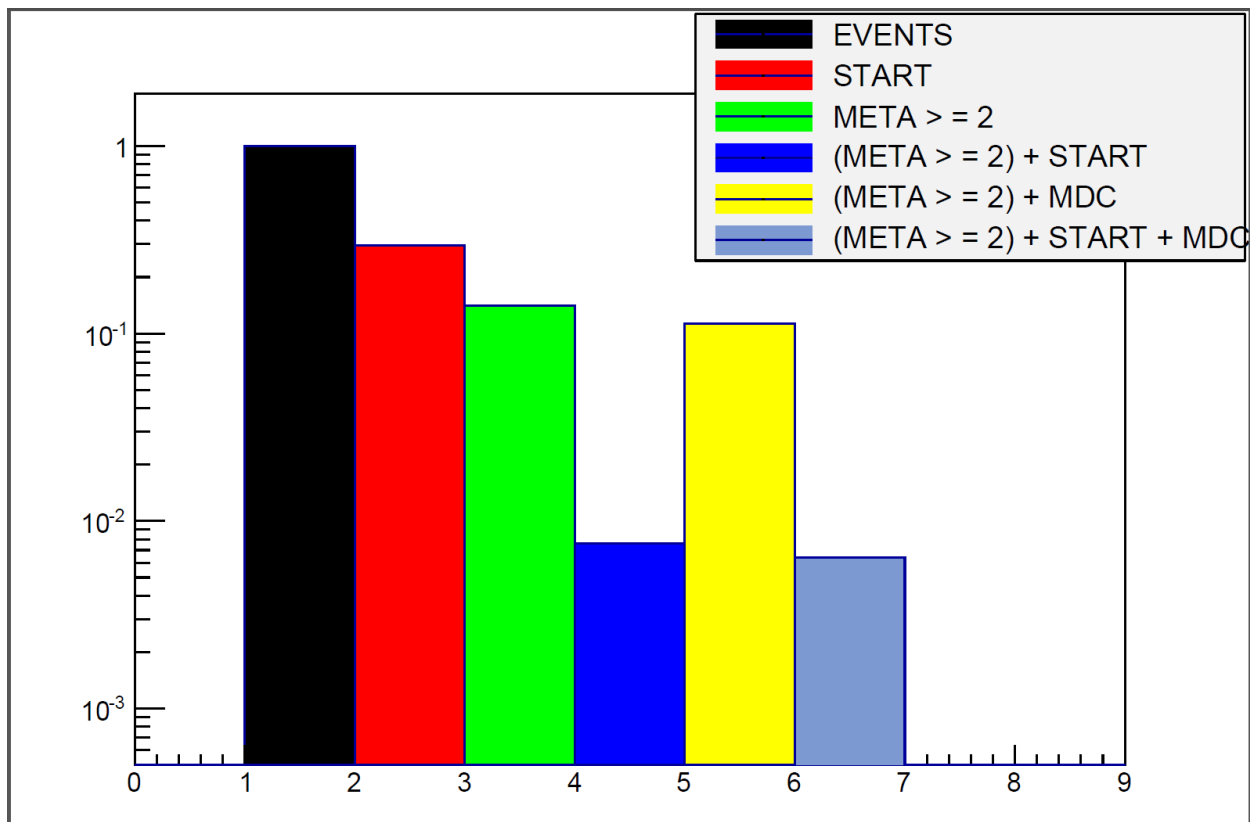
all-> $1 \cdot 10^5$

(START aktiv medium [-7.5 ; 7.5]) -> $7.7 \cdot 10^4 \sim 77\%$ (jochen`s prgram)

Geant : START hits (MUL>=1) ~ 30%



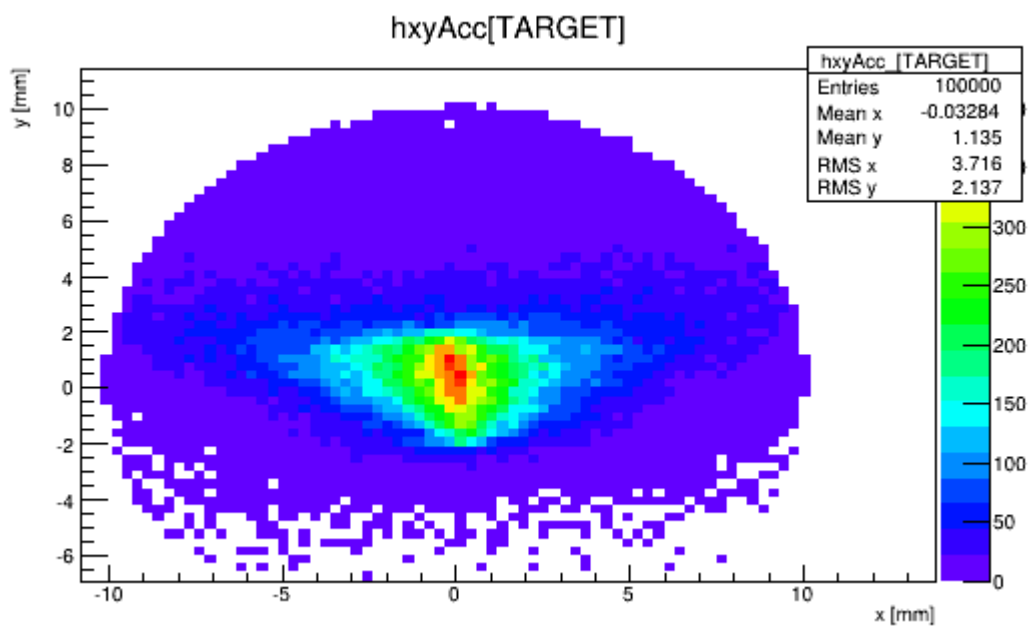


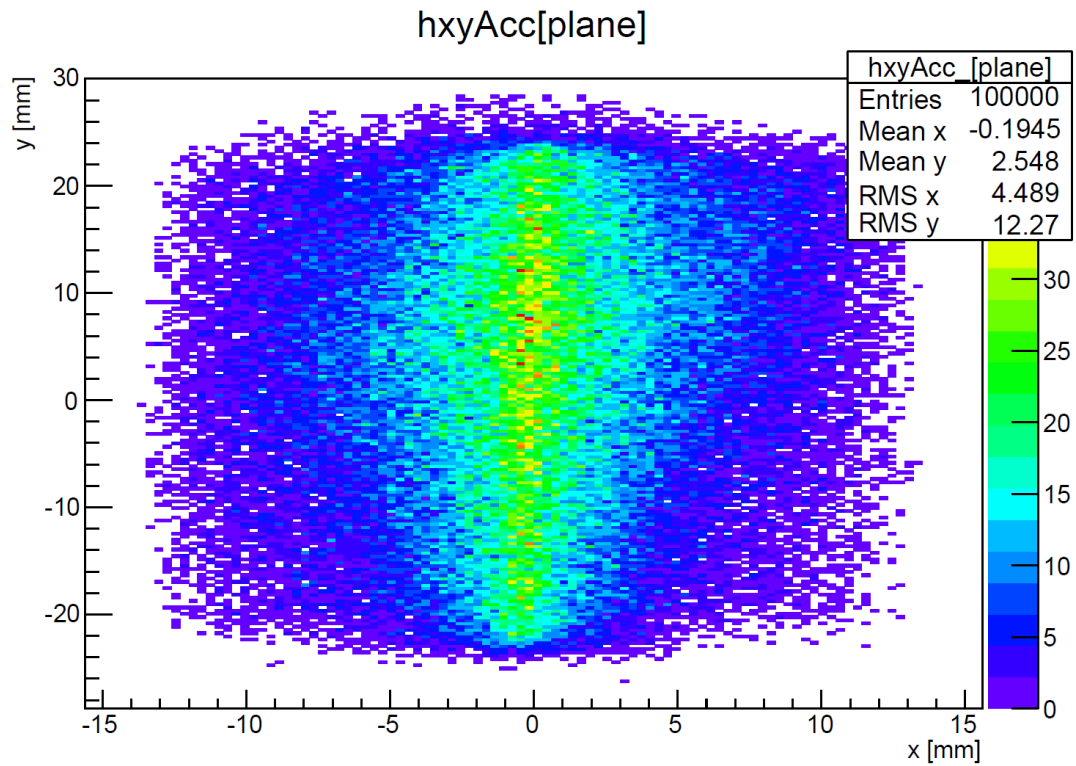


New setup:

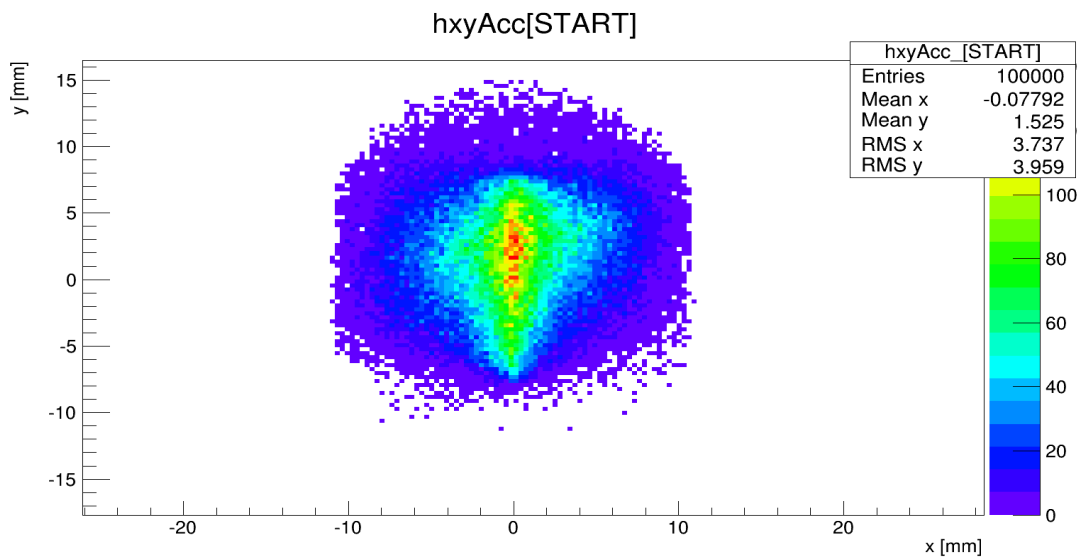
Condition:

Only hits present on Hades target (target detector placed at -60 mm $\text{abs}(x,y) < 10$ mm)

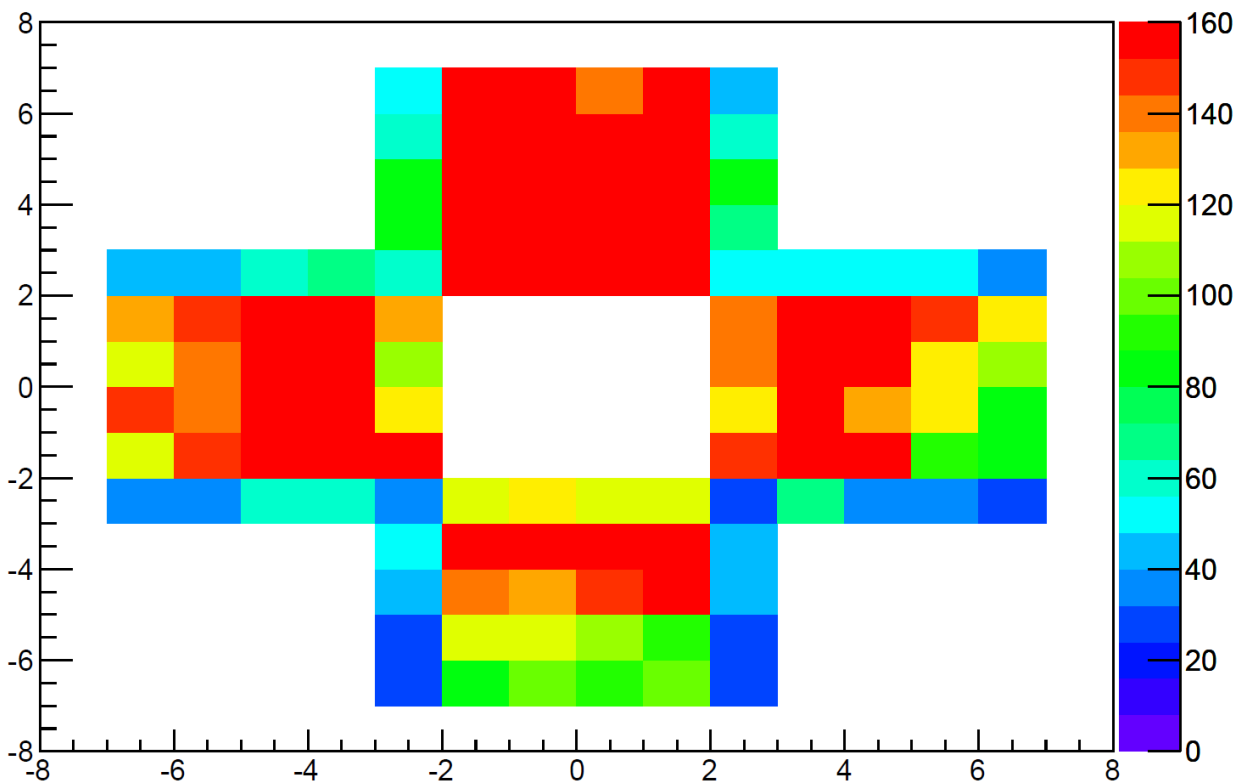
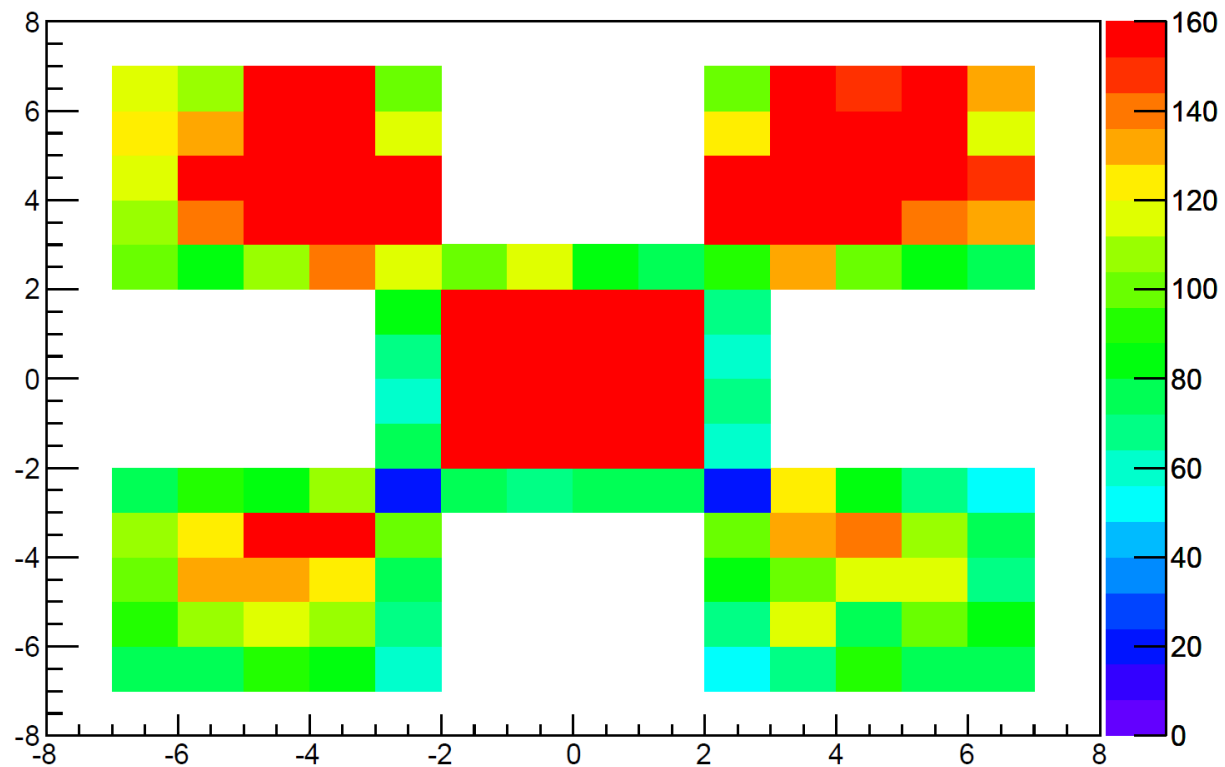


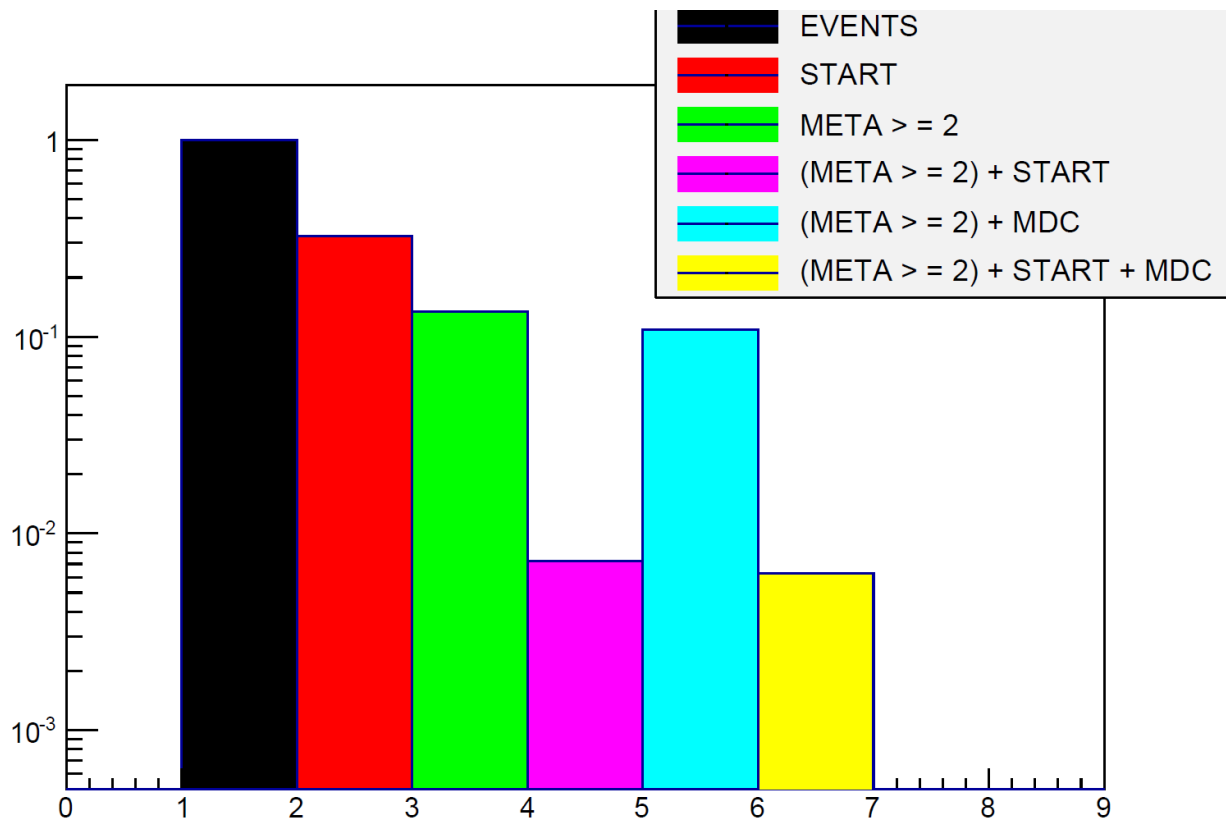


Start detector hit distribution (only hits present on target)



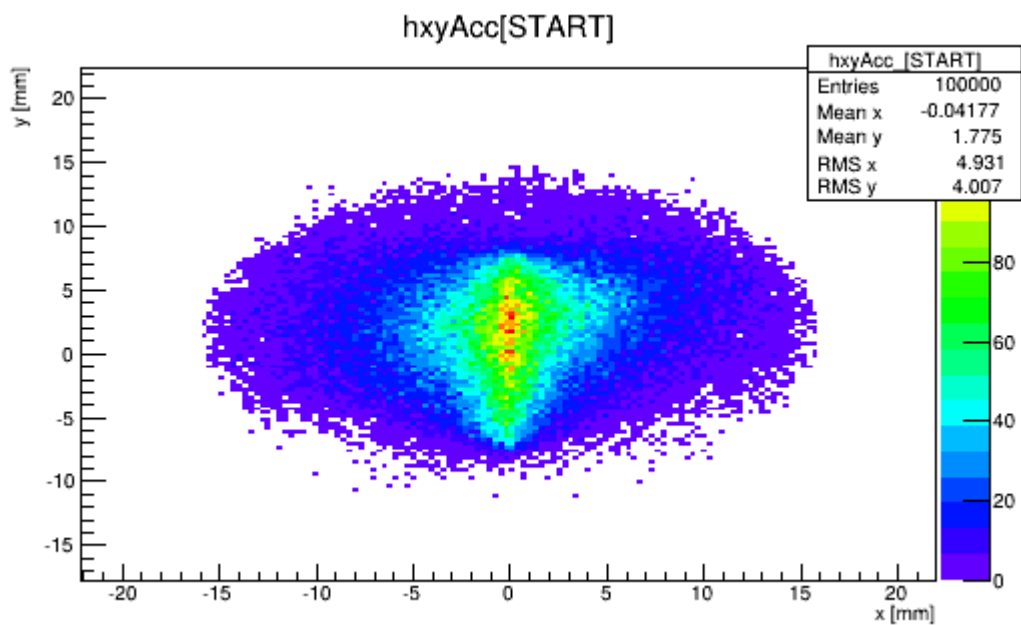
Number of pions is 100000 and 90000 are present in active plane (7.5x7.5 mm) of start detector (90%) (distribution on START obtained from Jochen code)



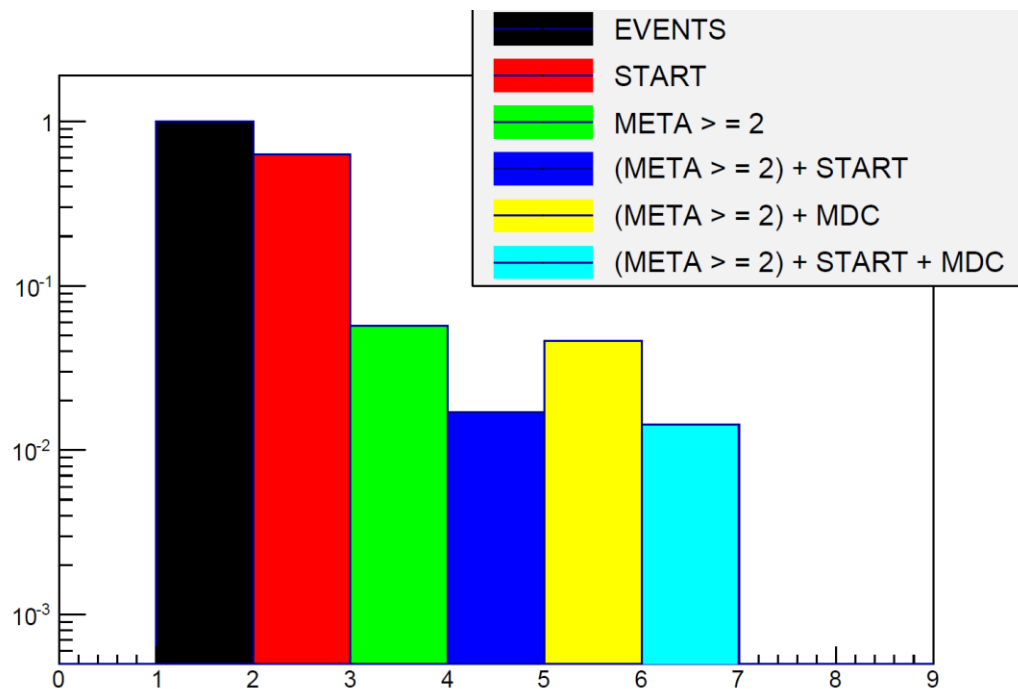
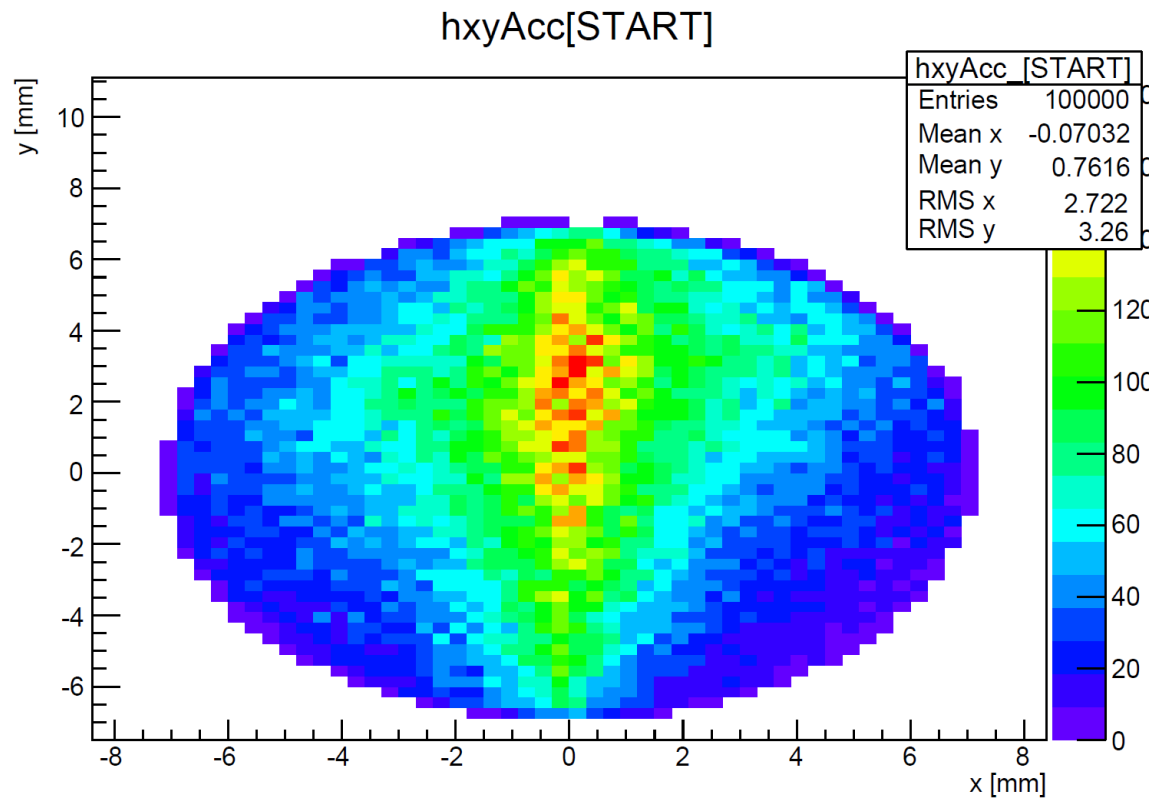


New setup:

Production plane -500 mm ($|X,Y| < 15$ mm)

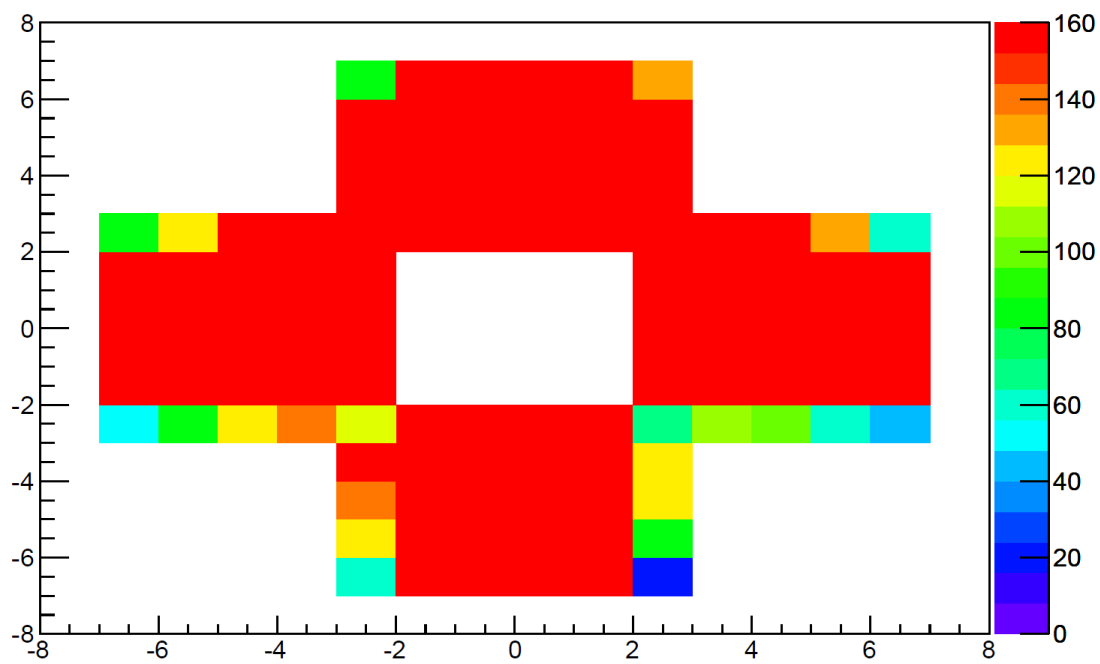
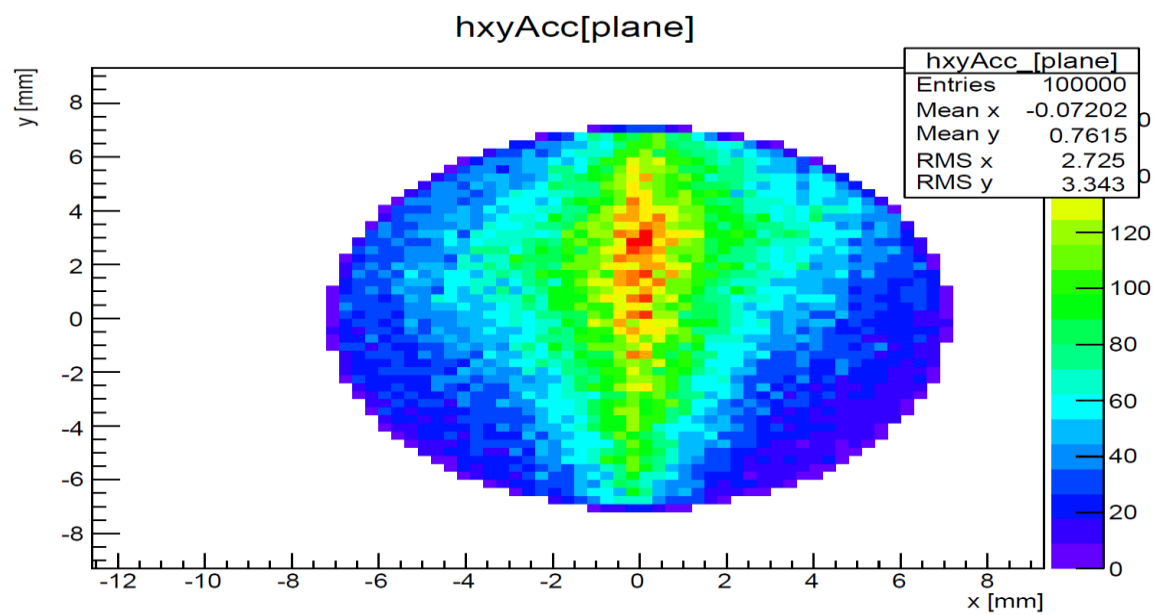


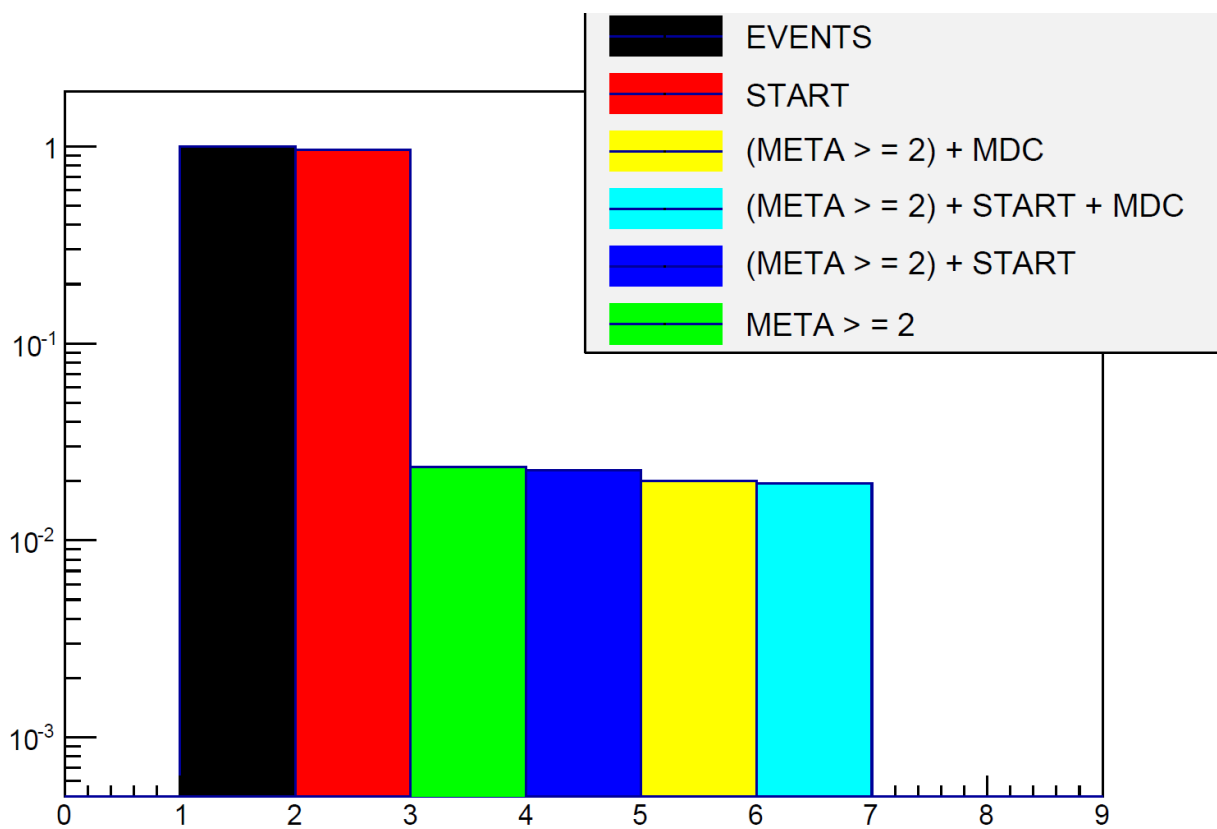
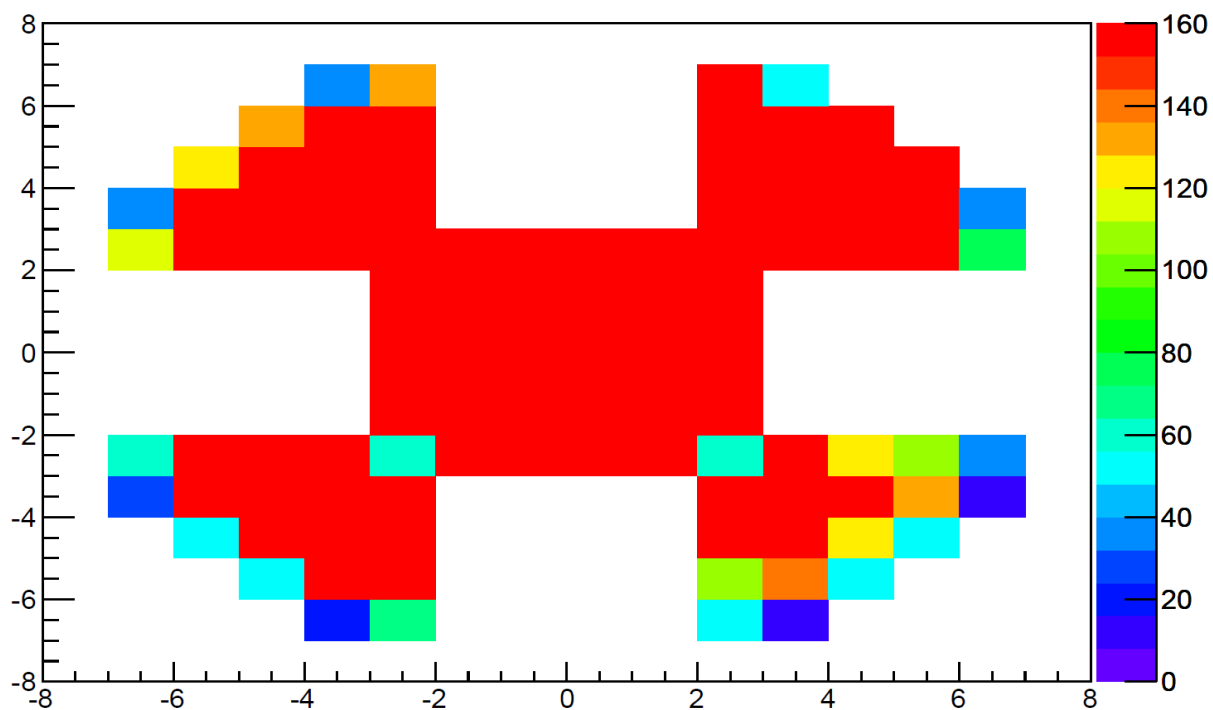
Number of pions 10^5 accepted in start 81%



New Setup:

Production plane set 1 cm before start detector (7 x 7 mm)





Plane -z pos[mm] X,Y	Start [% of hits]		Target
	Pion generator	Geant	
1200 20 x 20	78%	30 %	NO
1200 20 x 20	90%	33 %	YES
500 15 x 15	81%	64%	NO
390 7 x 7	100%	100%	YES

Some physics

$$\pi^- + p \Rightarrow n \rho^0 \rightarrow n \pi^+ \pi^-$$

