Beam induced Pair Background -hit distributions-

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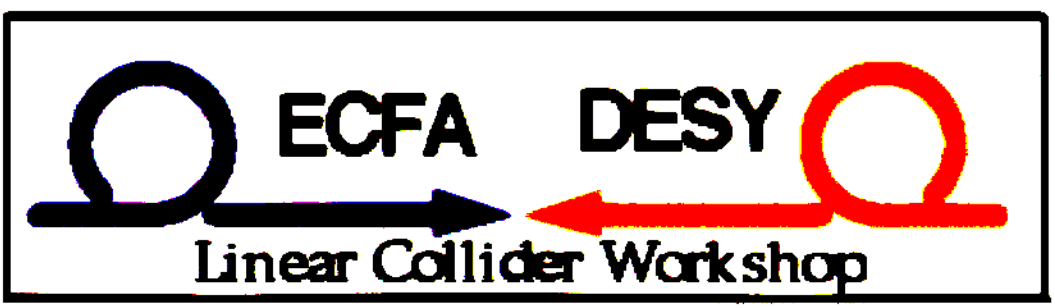


Topics

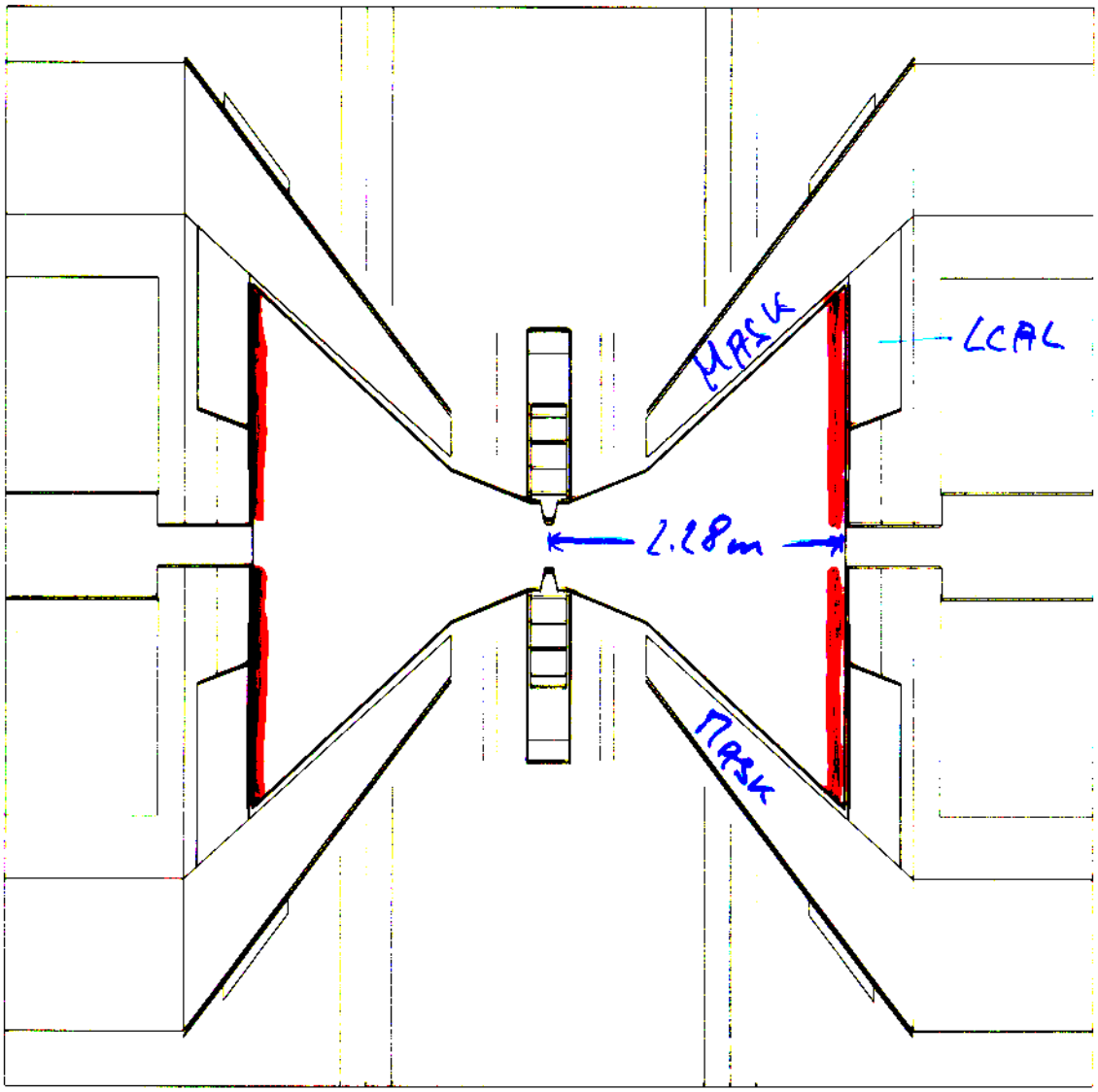
detector regions

- Mask/LCAL
- VTX
- TPC
- Summary

remark: BRAHMS

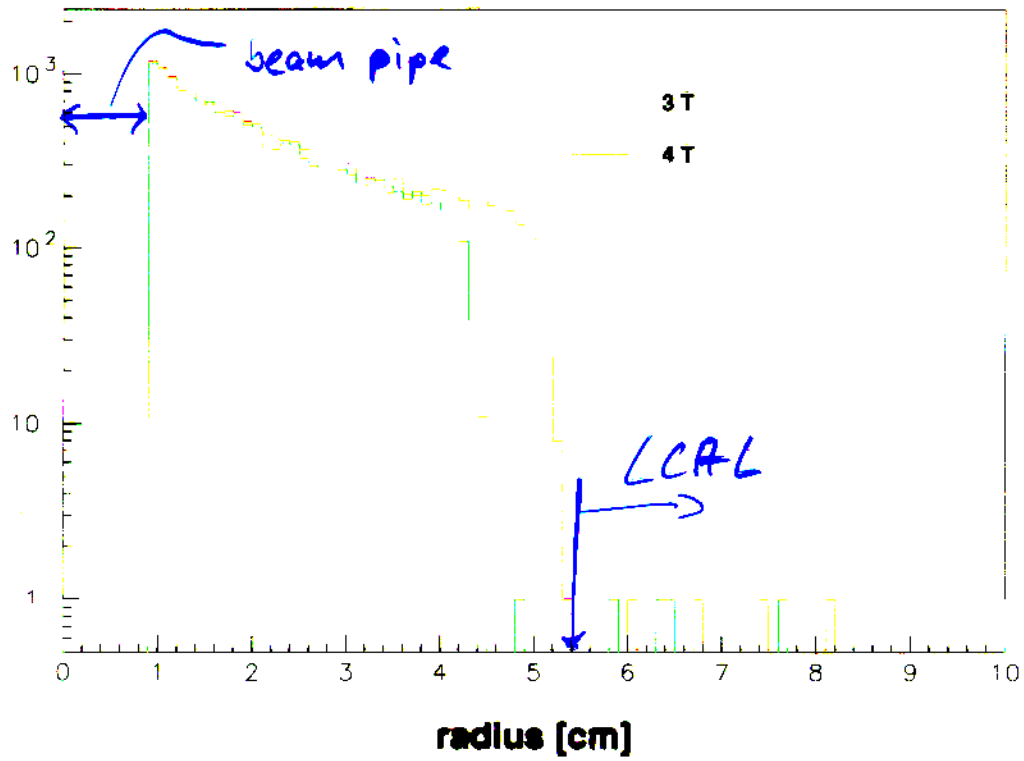
- version 103
- lower energy cutoff for
  electrons and photons 10 keV

Mask



Hit Distribution Mask I

- number of charged hits per BX per side

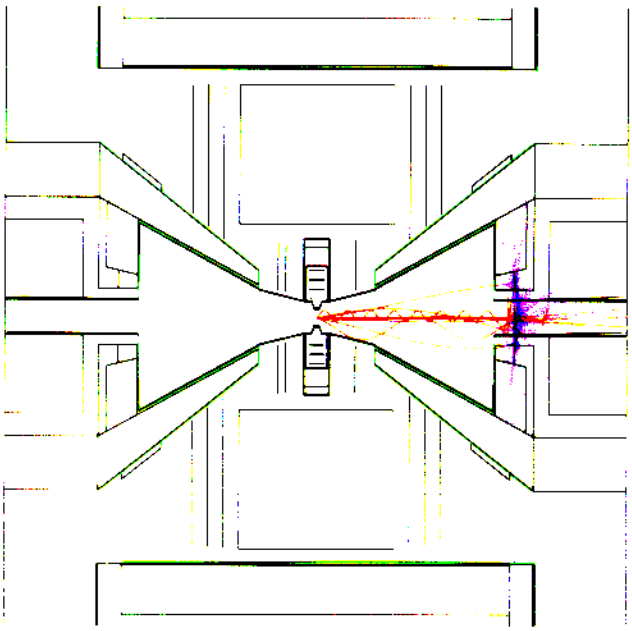


- energy deposition $0.9cm < r < 5.4cm$: 27.3/26.4TeV

- energy deposition $5.4cm < r$ (LCAL): 6/6GeV

Energy Flow LCAL

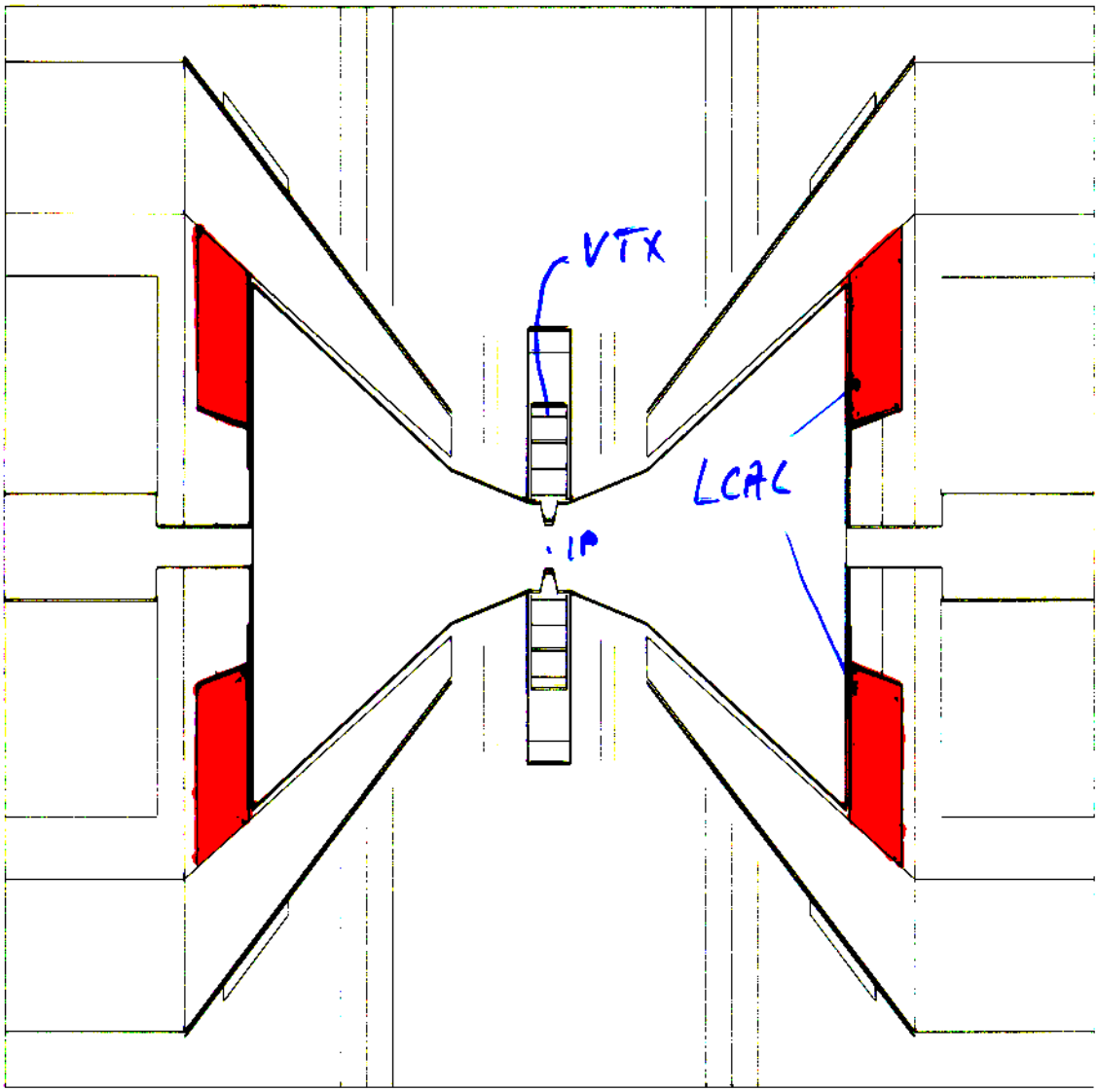
- photons entering the LCAL



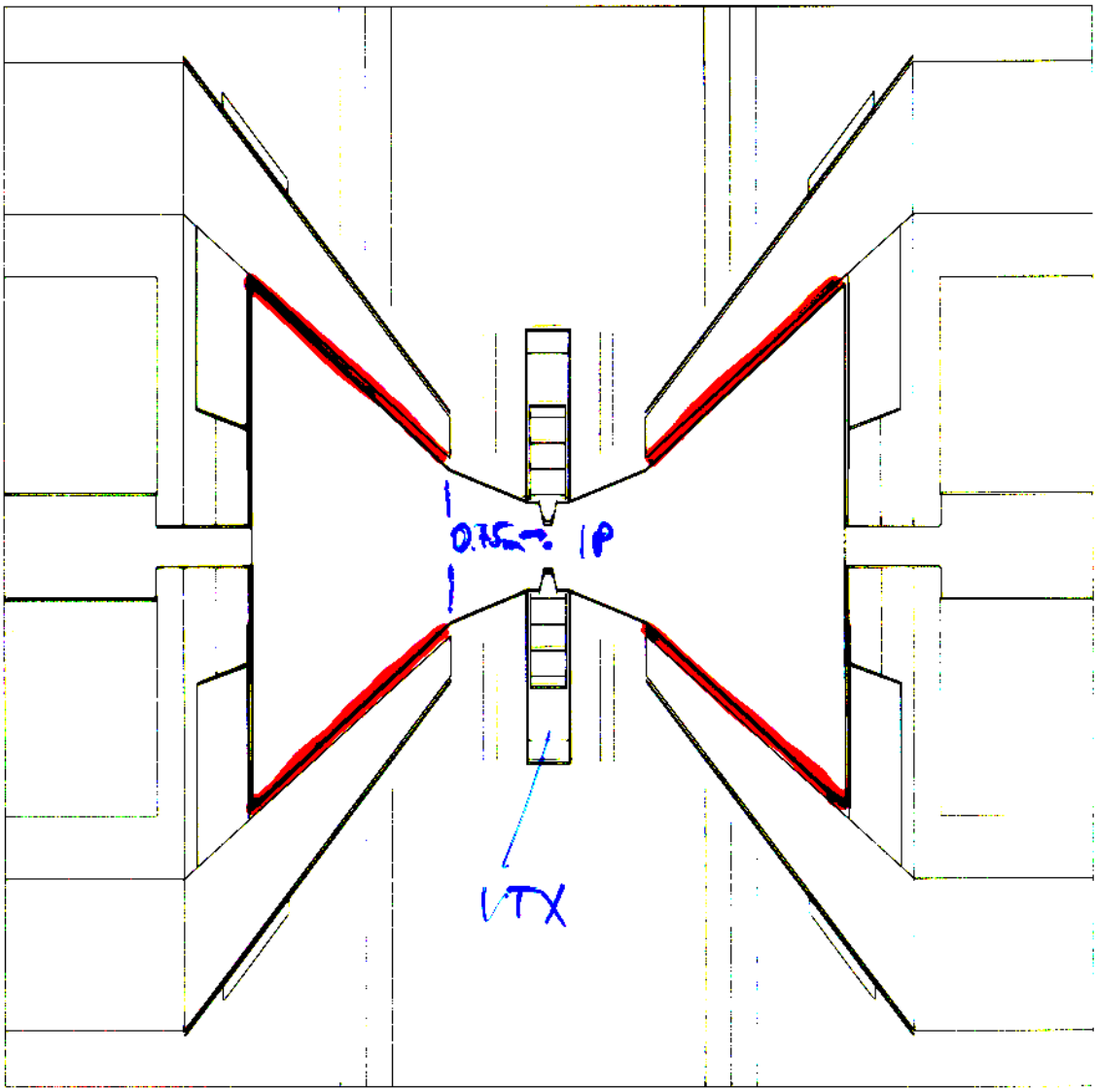
- total energy:
  3T:~1.5TeV
  4T:~1.3TeV

- ⇒ move LCAL ???

Mask/LCAL

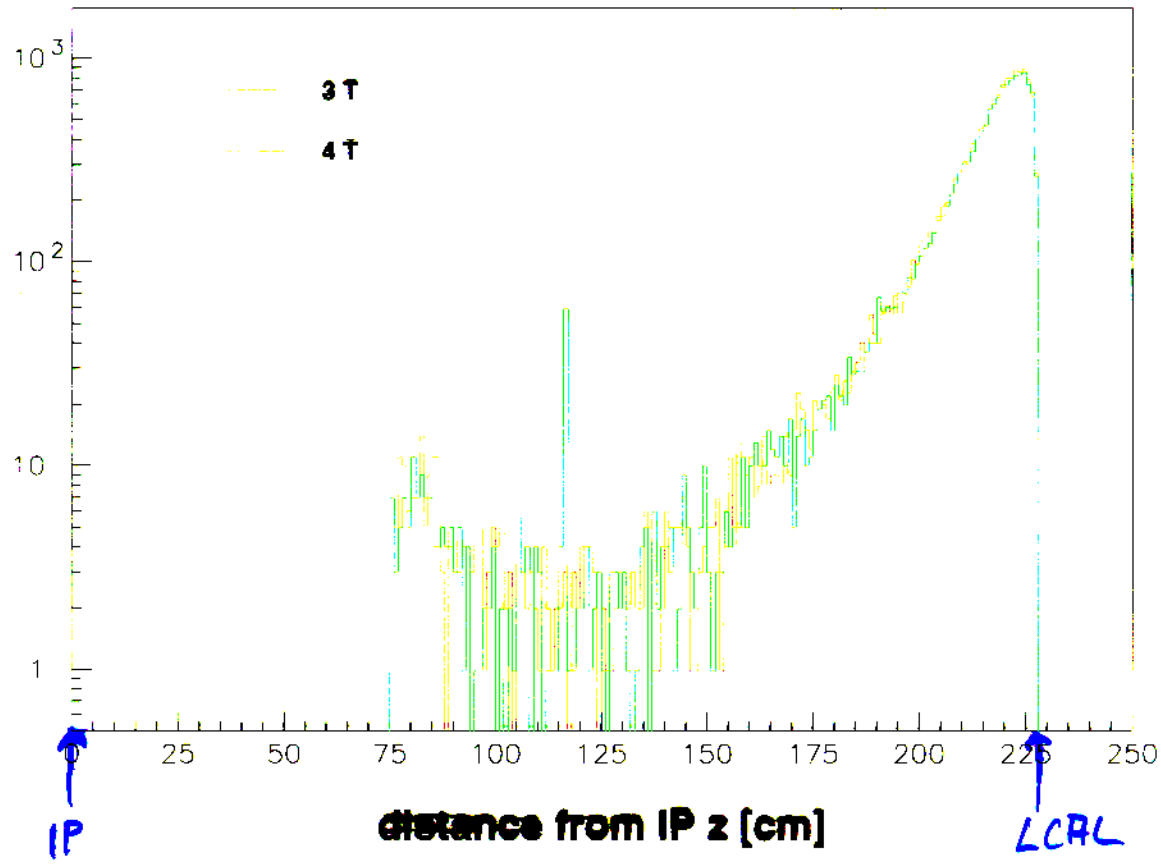


Mask



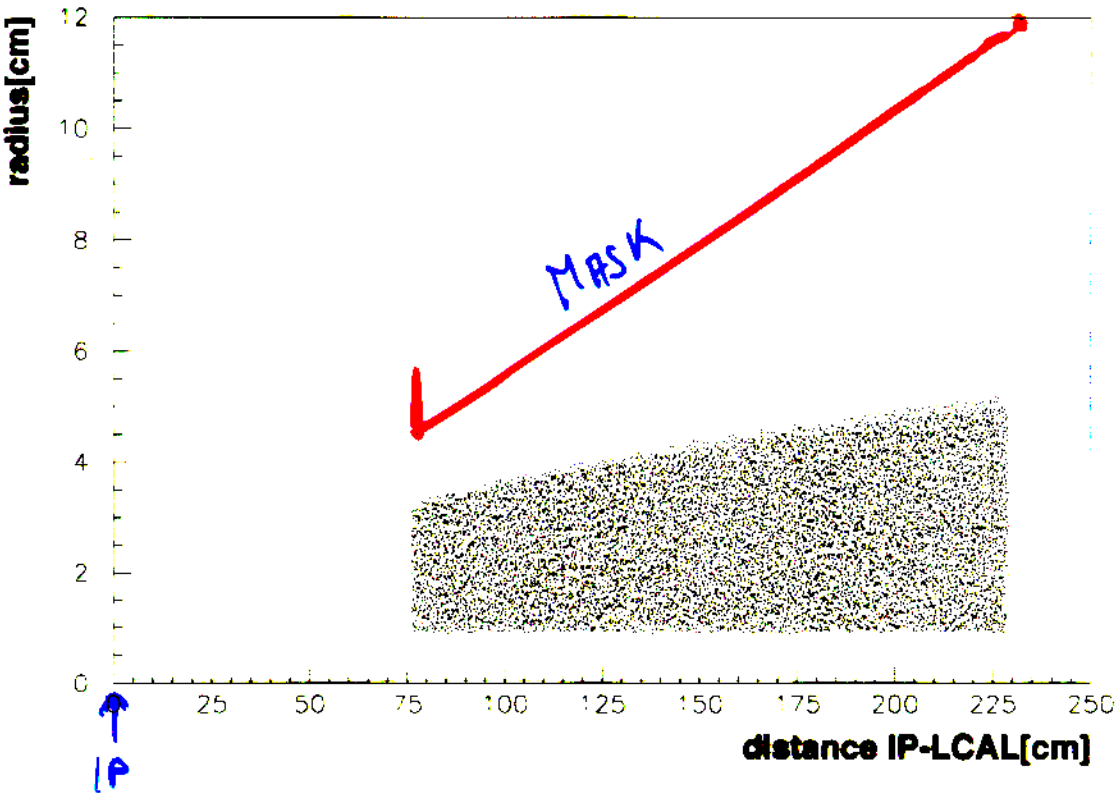
Hit Distribution Mask II

- conical mask
- number of hits per BX per side along z axis:



Hit Distribution Mask III

- conical mask
- position of LCAL
- hit distributions along z axis



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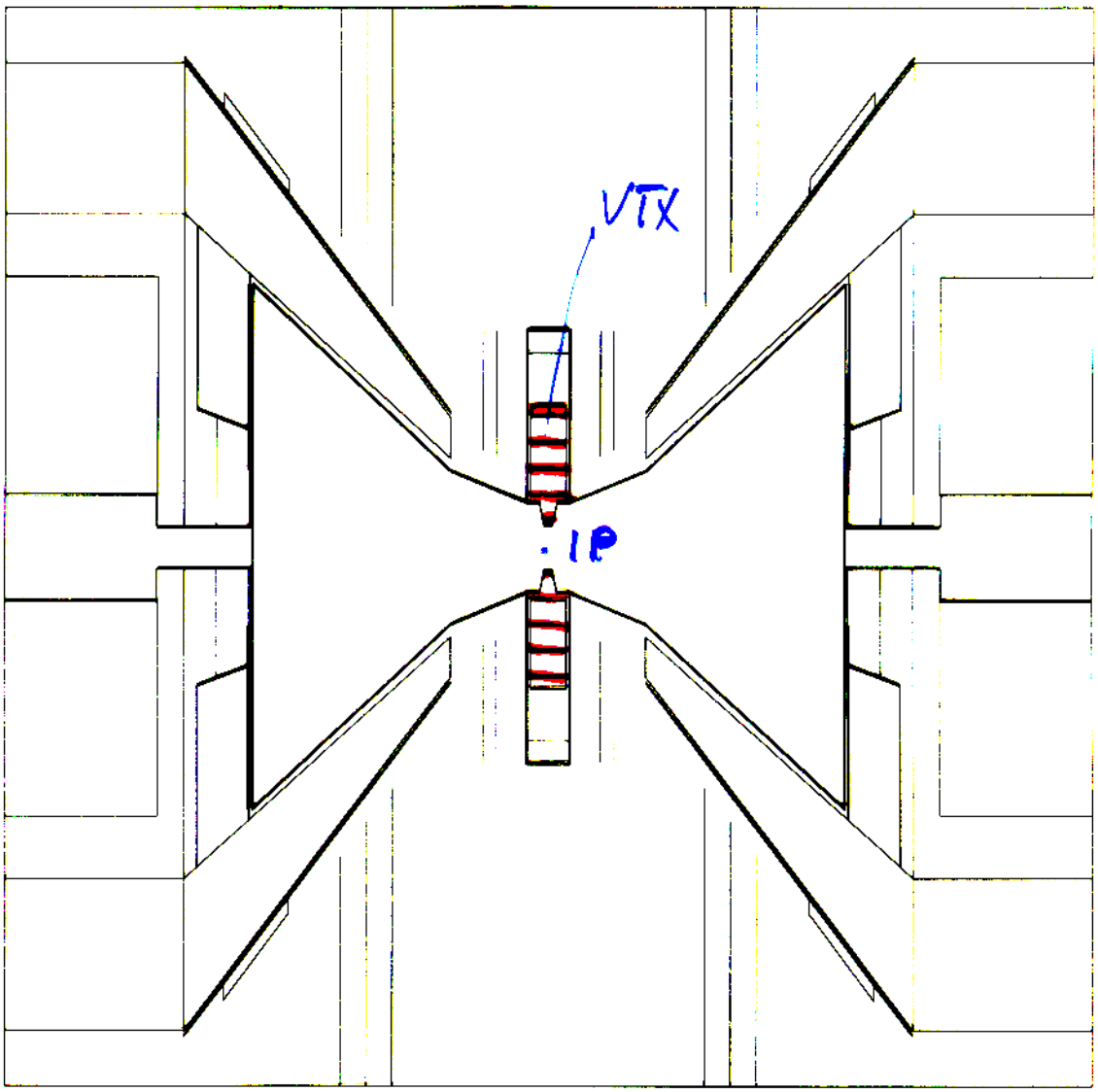
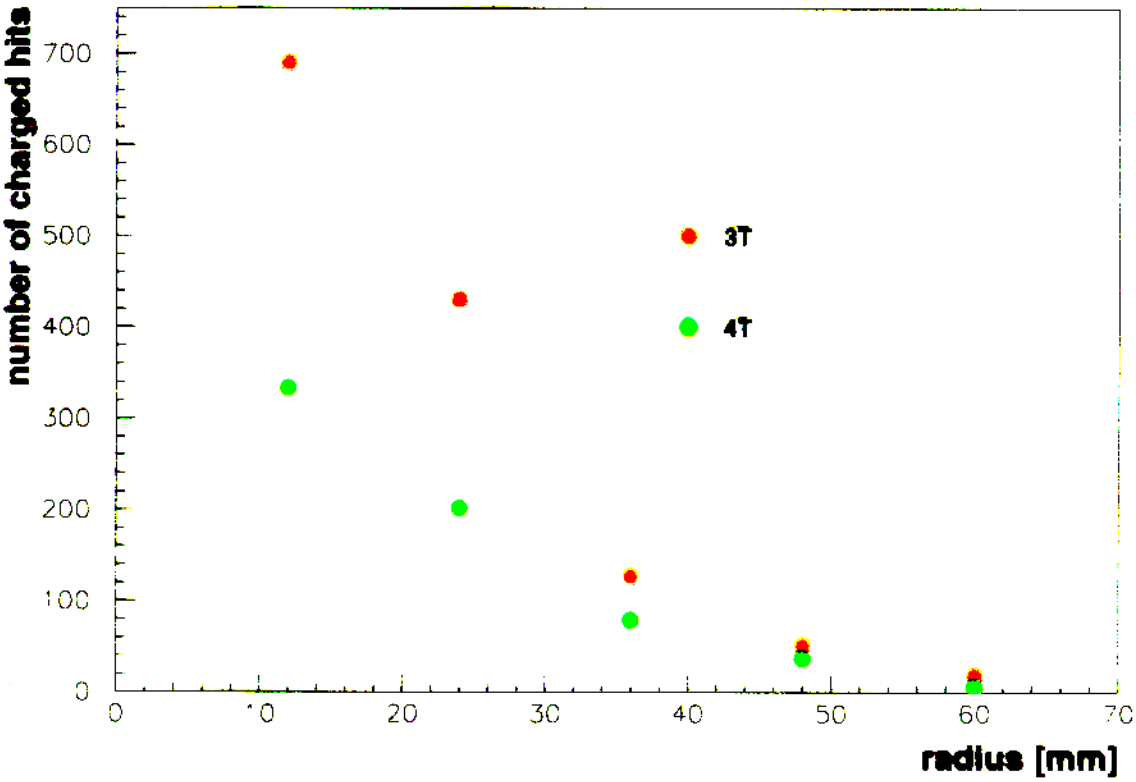
VTX



Charged Hits: VTX



⇒ occupancy VTX-Detector

Pitch	Strip $100\mu m$	Pixel $100 \times 200\mu m^2$
Layer 1	91.5/44.3%	0.4/0.2%
Layer 2	28.6/13.4%	0.02/0.01%

(3T/4T)

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Charged Hits: VTX

	$1/BX$	$1/BXmm^2$	$1/79BXmm^2$	$1/90BXmm^2$
Layer 1	690	0.183	14.5	16.5
12 mm	334	0.09	6.9	8.0
Layer 2	431	0.011	0.90	1.03
24 mm	202	0.005	0.42	0.48
Layer 3	128	0.002	0.18	0.20
36 mm	79	0.001	0.11	0.13
Layer 4	52	0.0007	0.054	0.062
48 mm	37	0.0005	0.039	0.044
Layer 5	19	0.0002	0.016	0.018
60 mm	6	0.0001	0.005	0.006

magnetic field: 3T/4T

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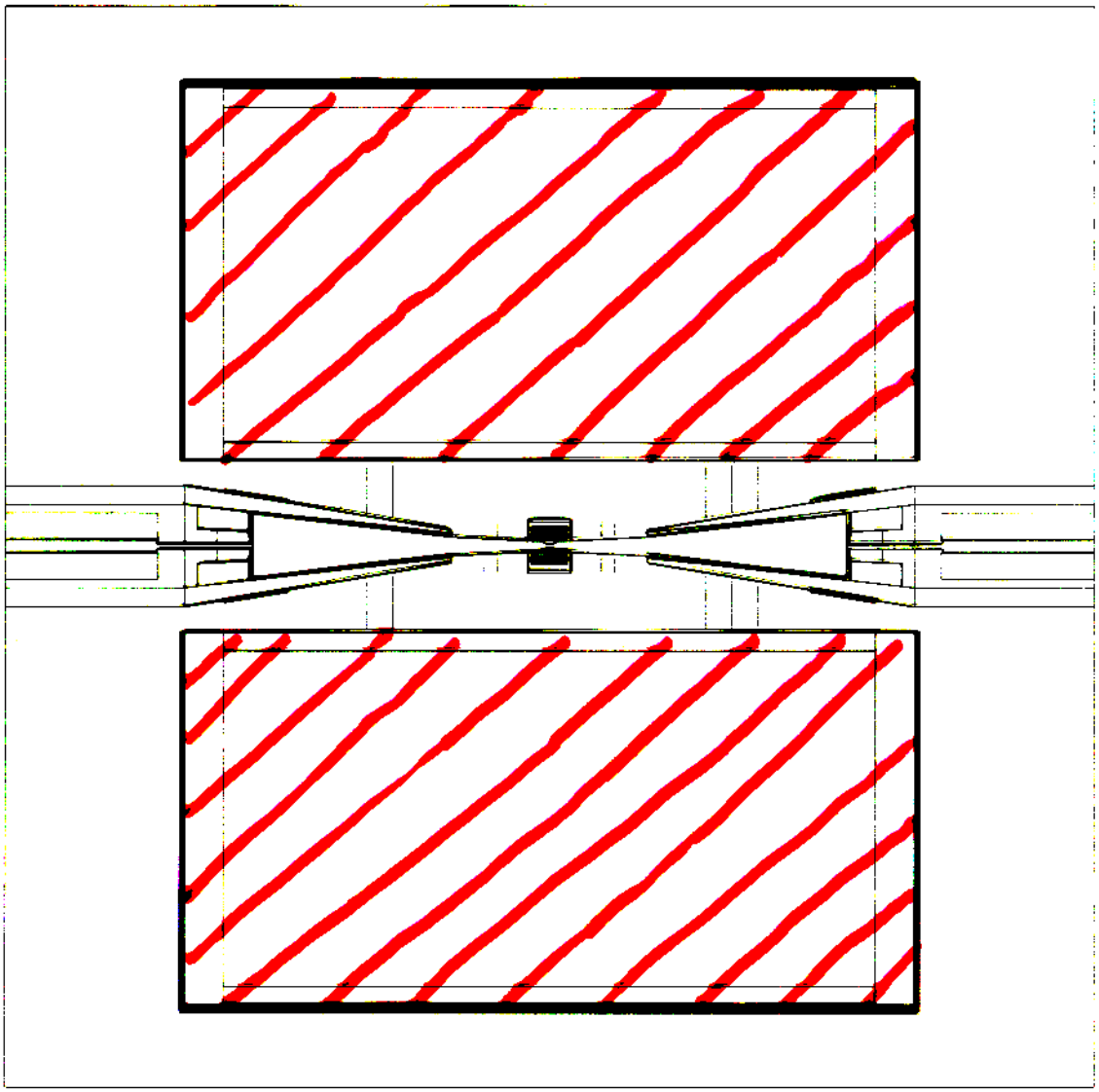
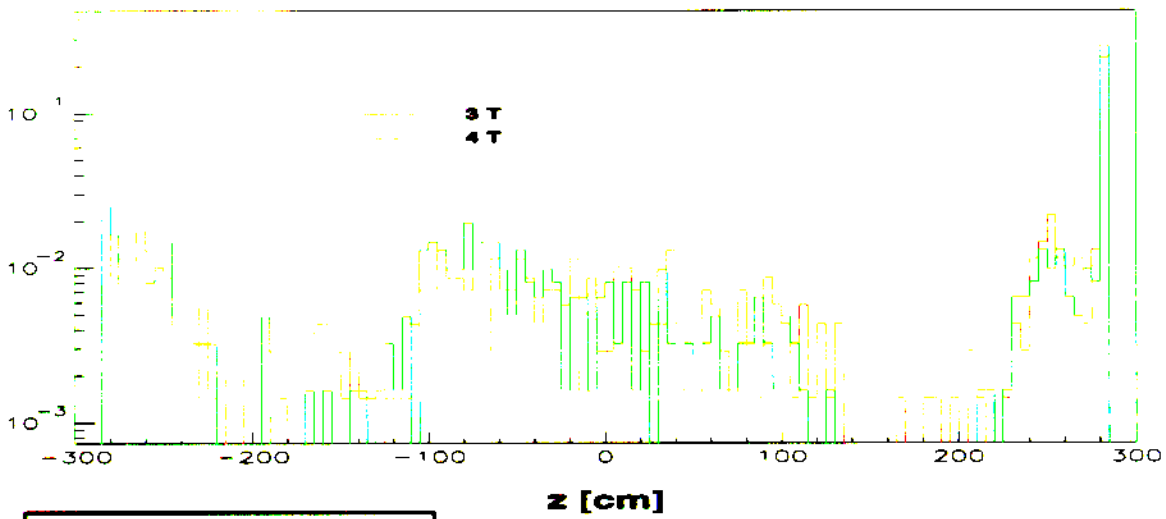
TPC



Photons entering TPC

photons per BX	1350 1200
photons per 133BX	180 000 160 000
photons per train	3.8×10^6 3.4×10^6
photons per 90BX	122 000 108 000

- magnetic field: 3T/4T
- hit distribution along z axis:



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Summary

- pair background
- hit distributions/densities (3T and 4T):
  - Mask/LCAL
    - hit distribution √
    - energy flow (√)
  - VTX
    - no. charged hits per layer √
    - occupancy per layer √
  - TPC
    - no. photons entering TPC √