



Status report about the e - μ identifier



Gh. Grégoire
University of Louvain

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Layout of the downstream subdetectors

1. Shielding and residual stray field

with
magnetic
shielding

2. Particle tracking and transverse detector sizes

3. Design of the Cerenkov e - μ identifier

(This talk)



Starting points



1. Tracking 240 MeV/c muons downstream the last correction coil (Geant)

taking into account the magnetic shielding !

Muon sample from P. Janot (10000 muons)

Electrons (4256 events)

(originating at the downstream face of the last correction coil)

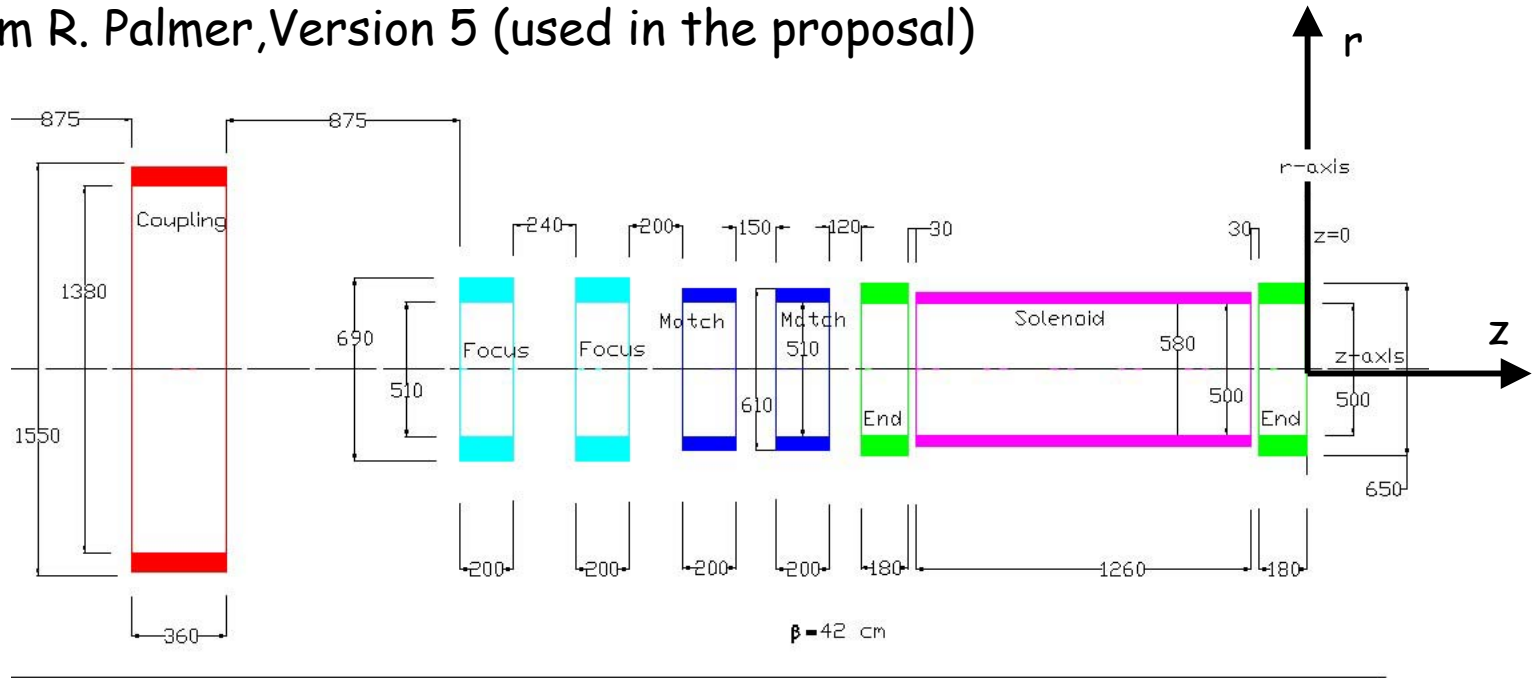
2. z-locations and transverse sizes of the TOF, Cerenkov and calorimeter
3. Design of the downstream Cerenkov identifier



Active magnetic elements



From R. Palmer, Version 5 (used in the proposal)



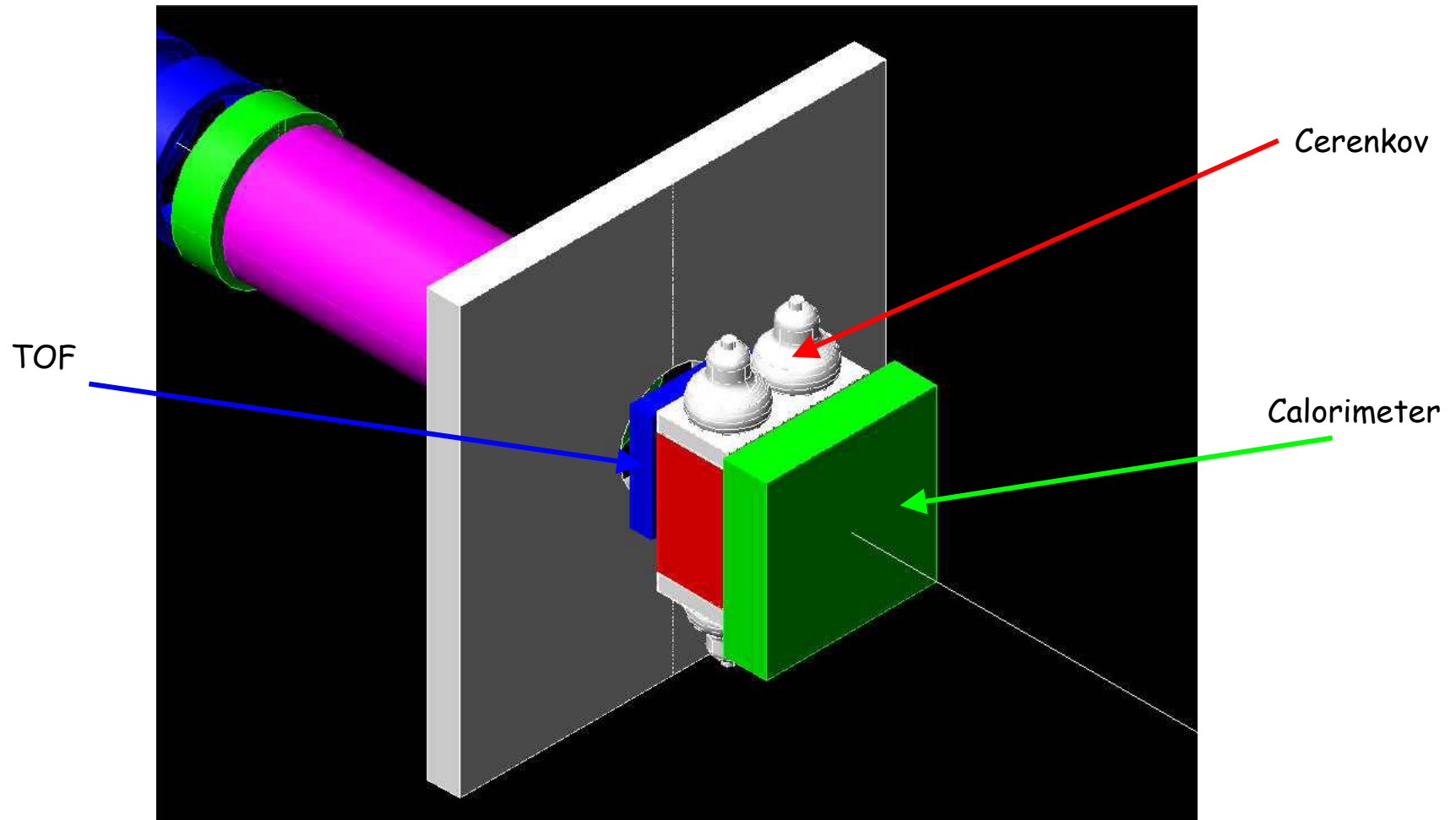
Current densities

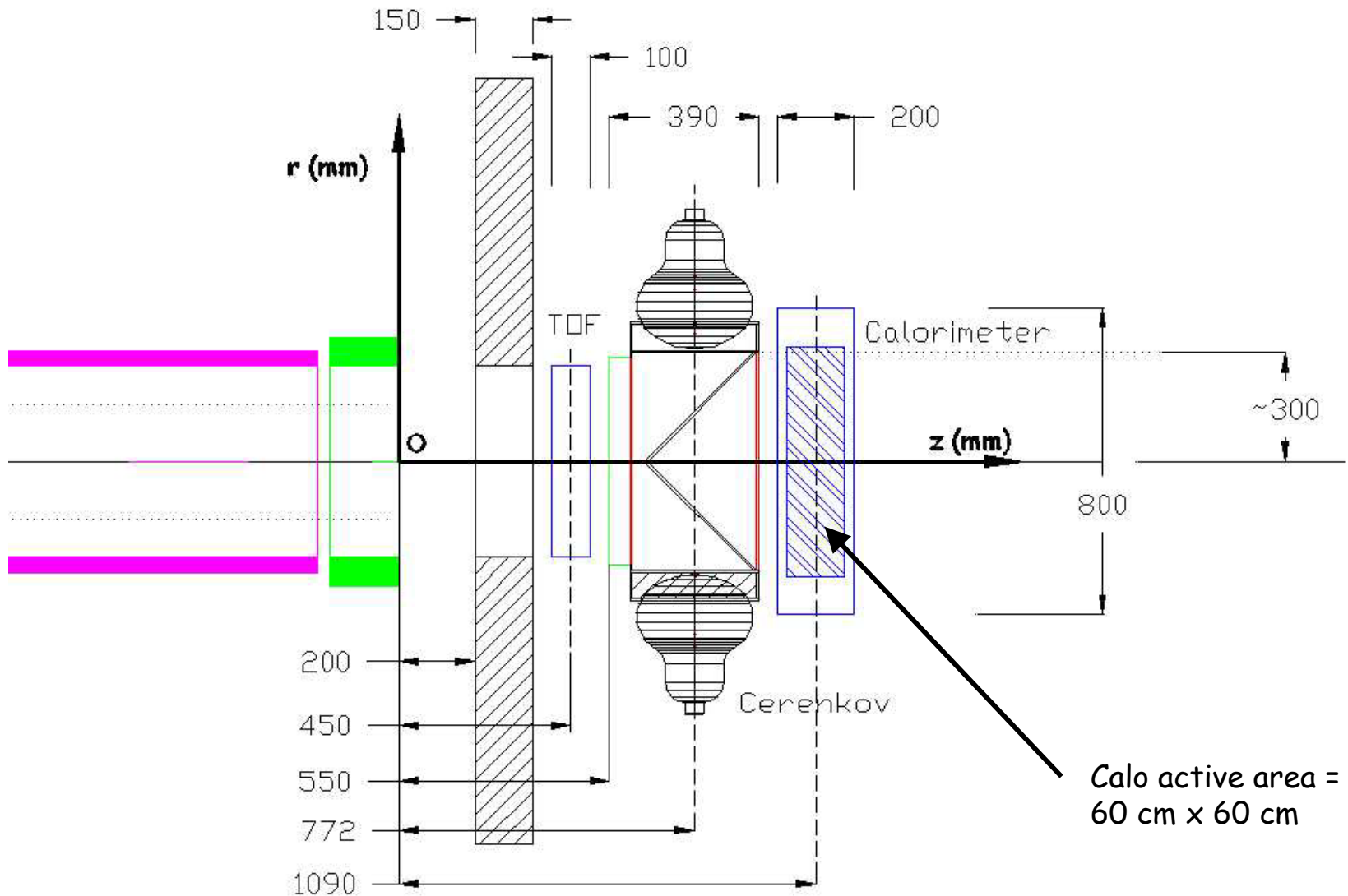
- 105.63
- 106.67
- +106.67
- 64.25
- 99.35
- 66.67
- 80.95
- 85.93

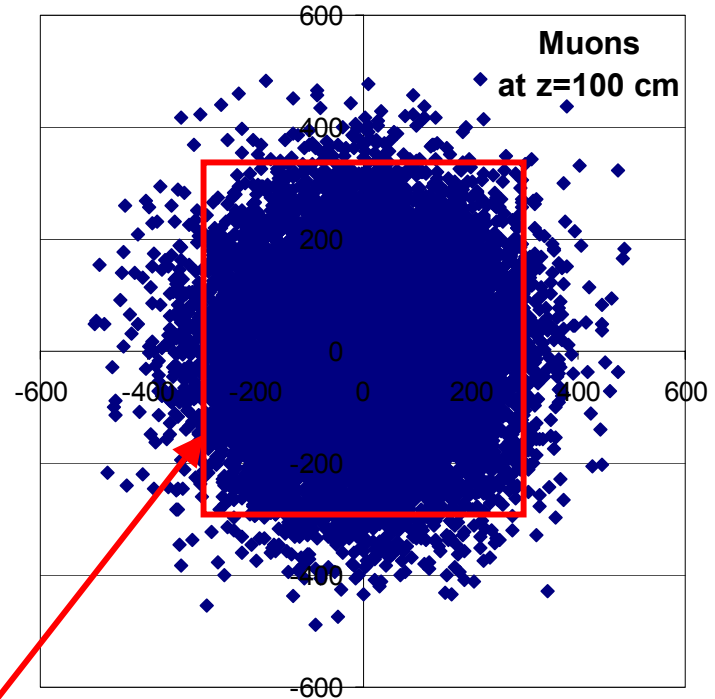
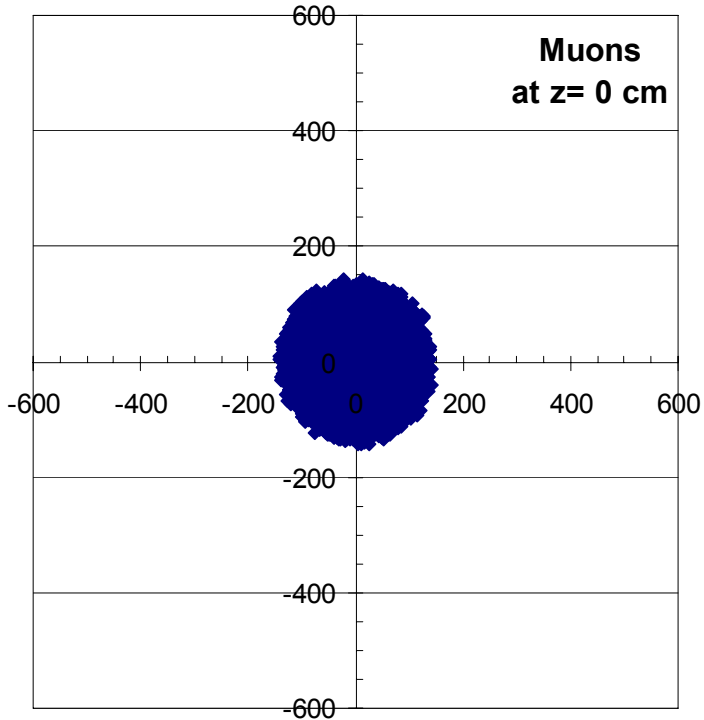
Ref. R. Palmer Nov. 20, 2002
Version 5



Downstream detectors







At the end of the last correction coil

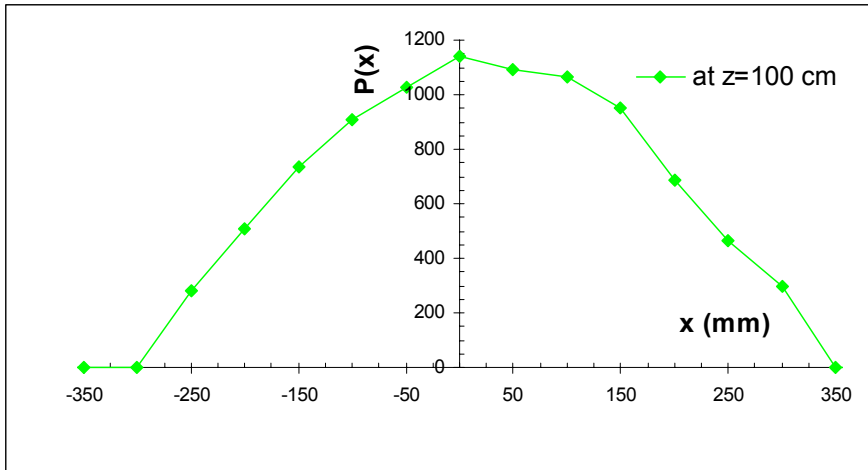
At the proposed position of the calorimeter

Approx. max. size of the calorimeter : 60 cm x 60 cm

(L. Tortora)



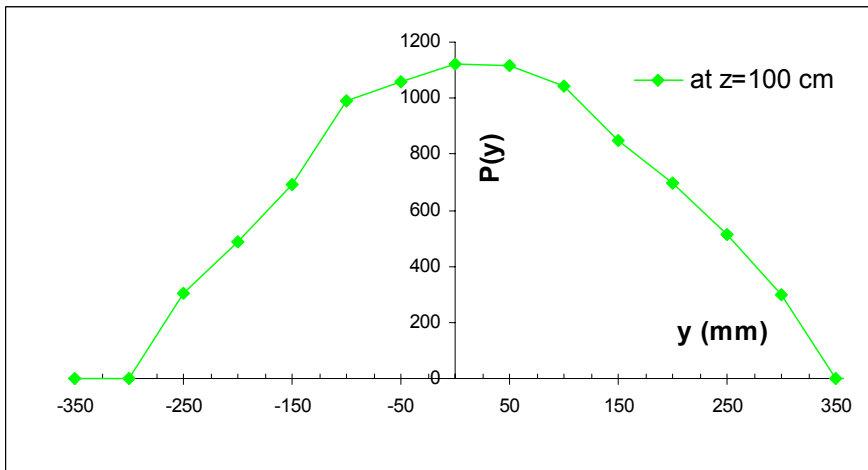
Muon distributions at the calorimeter



At the proposed z-position



The geometrical aperture nearly covers the whole distribution.

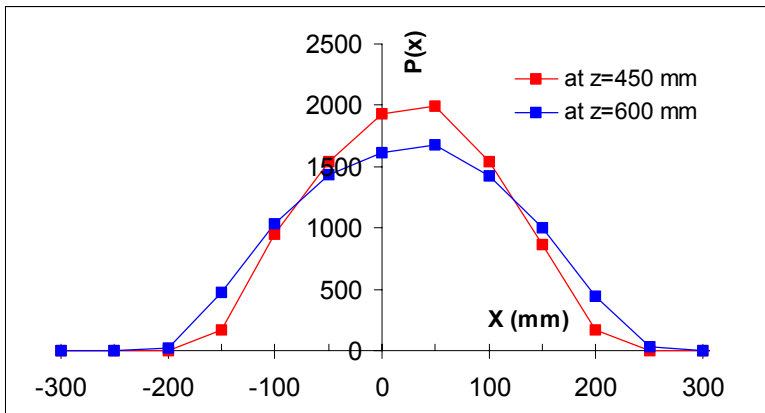




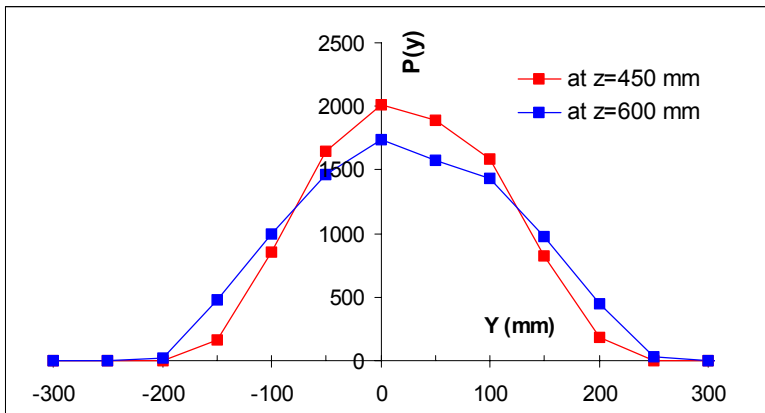
Muon distributions in TOF and Cerenkov

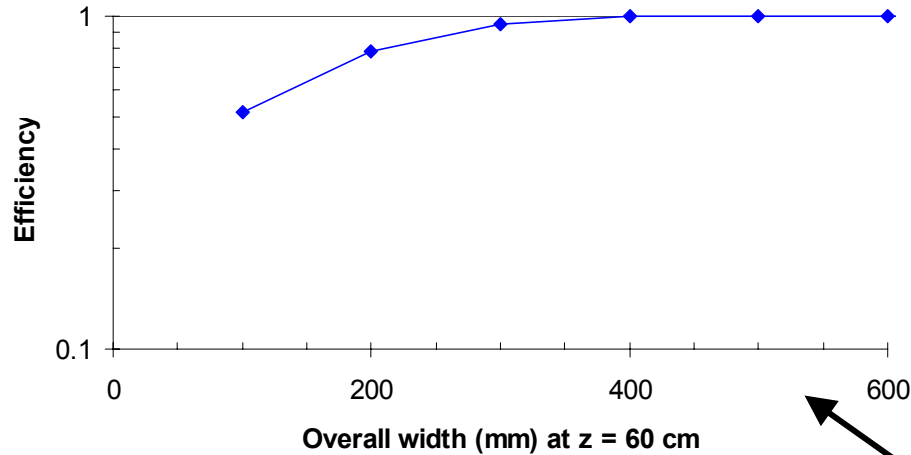


The TOF and aerogel radiator of the Cerenkov must cover the distribution of muons at their respective positions



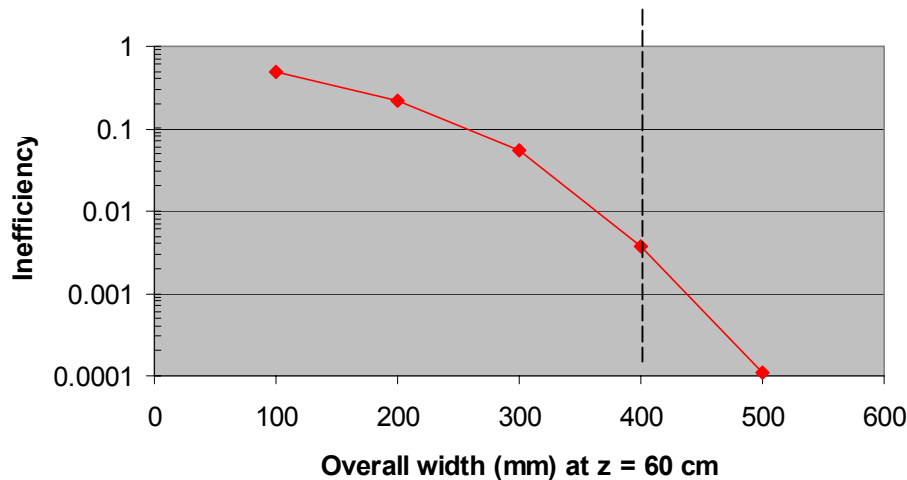
— TOF
— Cerenkov





Geometric coverage of muon distribution at z=60 cm

$$\varepsilon = \frac{\text{Muons in the aerogel}}{\text{Muons in the calorimeter}}$$



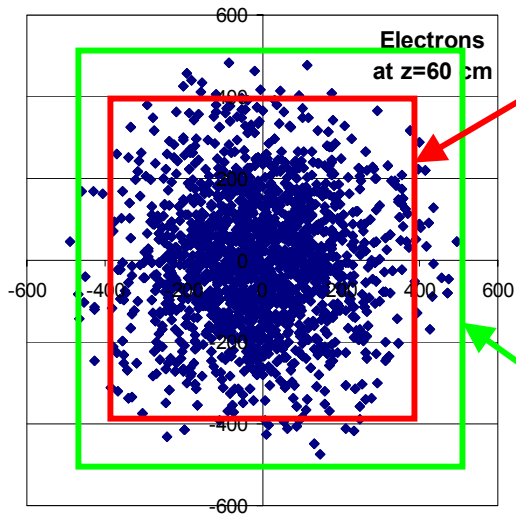
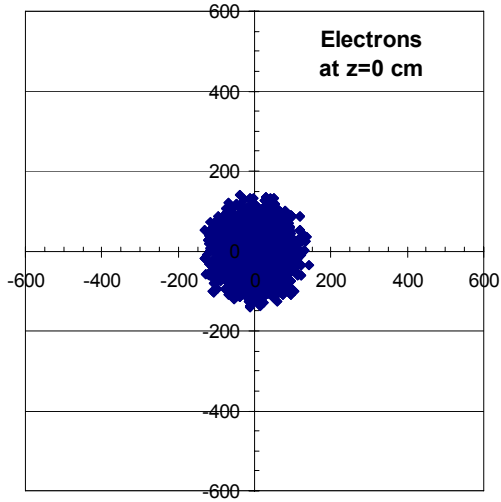
Transverse size of aerogel radiator



The size of a square aerogel radiator should be larger than 40 cm in order to miss less than 10^{-3} of the incoming muons



Electron distributions

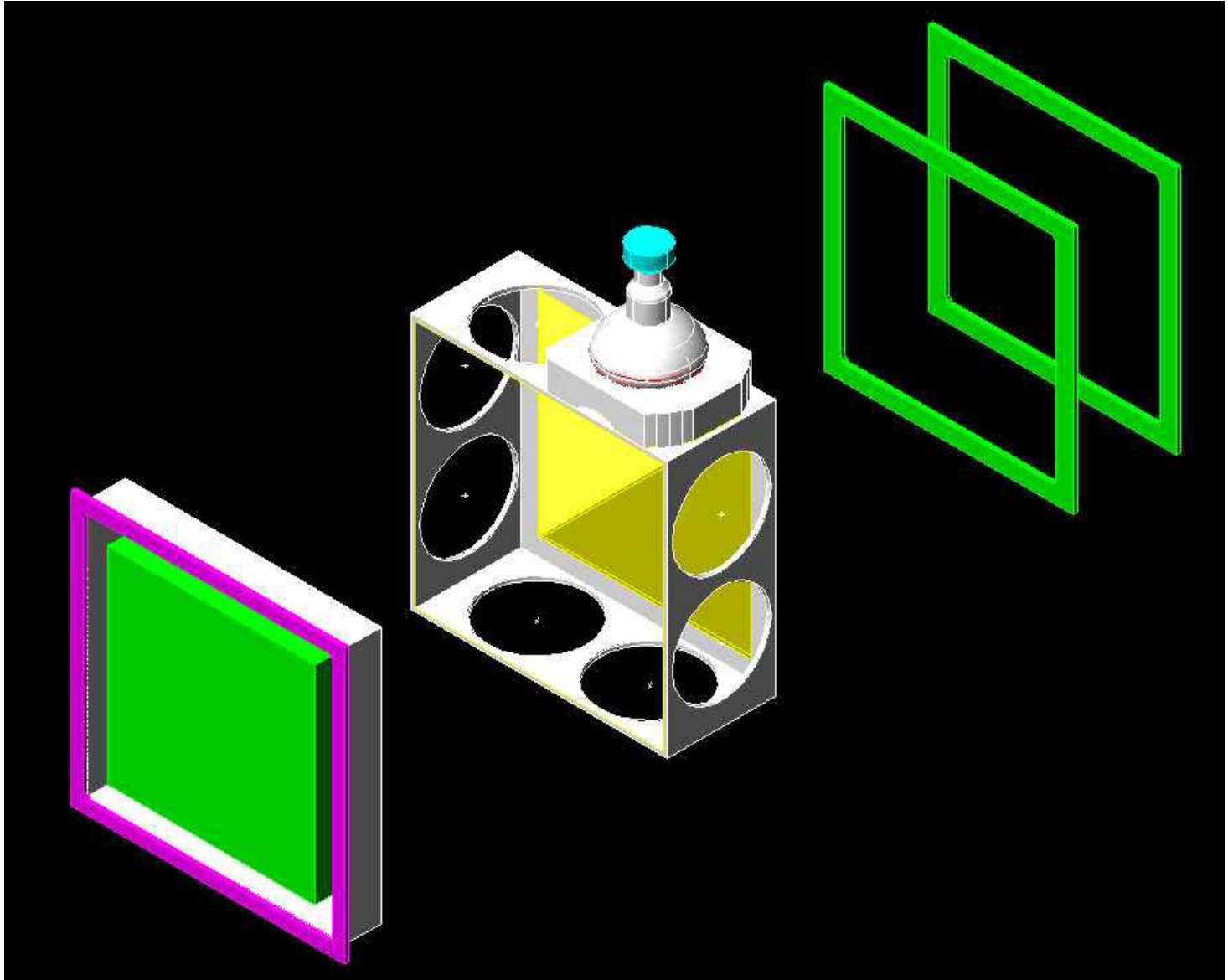


40 cm x 40 cm

50 cm x 50 cm



Present status of the mechanical design





1. Finalize mechanical design
2. Evaluate optical performances
3. Updates on cost, quotations and deadlines (mechanics, optics, aerogel ...)



After approval by the collaboration !

4. Funding and construction (?)