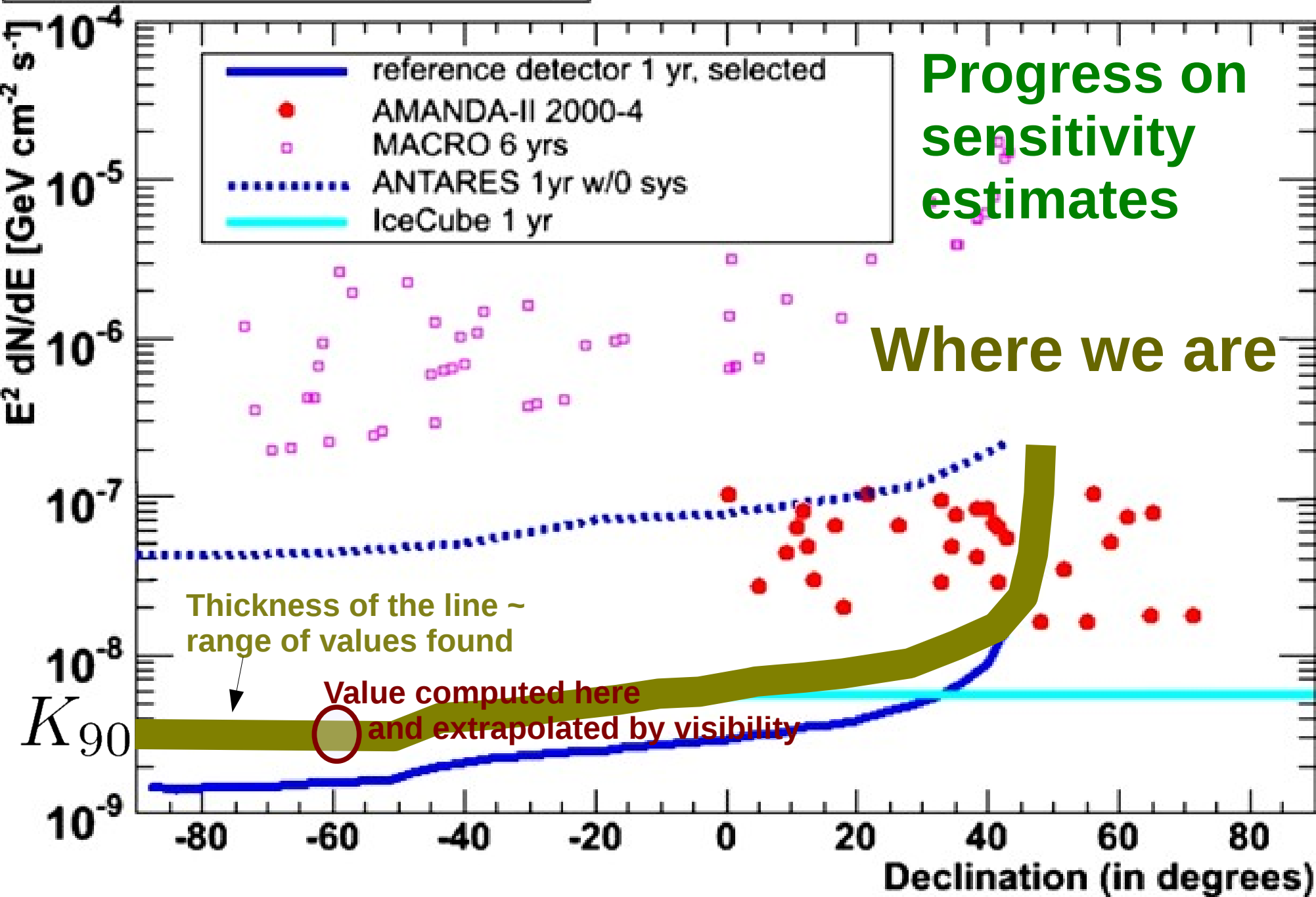


**WP2 session summary,  
Tuesday Feb 24**

$\nu_\mu E^{-2}$  flux limits (90% c.l.)



# Progress on sensitivity estimates :

**Distance between floors** : from 30m to 40 m : improvement of sensitivity by 15%

**Distance between lines** : From 130m to 150m :improvement of sensitivity by 10%

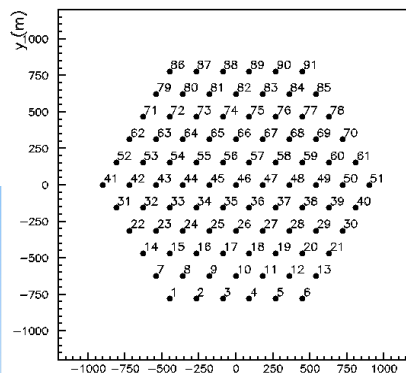
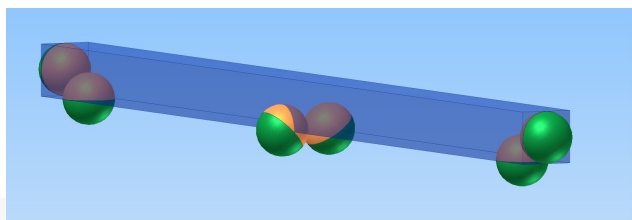
Sensitivity ( $\text{GeV s}^{-1} \text{cm}^{-2}$ ) to a point like source - 1 year

|                               | Spectral index       |                     |                     |
|-------------------------------|----------------------|---------------------|---------------------|
|                               | -1.8                 | -2.0                | -2.2                |
| <b>130</b> _ <b>20 40 10*</b> | $3.1 \cdot 10^{-10}$ | $3.1 \cdot 10^{-9}$ | $2.6 \cdot 10^{-8}$ |
| <b>150</b> _ <b>20 40 10*</b> | $2.8 \cdot 10^{-10}$ | $2.8 \cdot 10^{-9}$ | $2.4 \cdot 10^{-8}$ |
| <b>180</b> _ <b>20 40 10*</b> | $2.7 \cdot 10^{-10}$ | $2.8 \cdot 10^{-9}$ | $2.5 \cdot 10^{-8}$ |

LNS (Rosa talk) :

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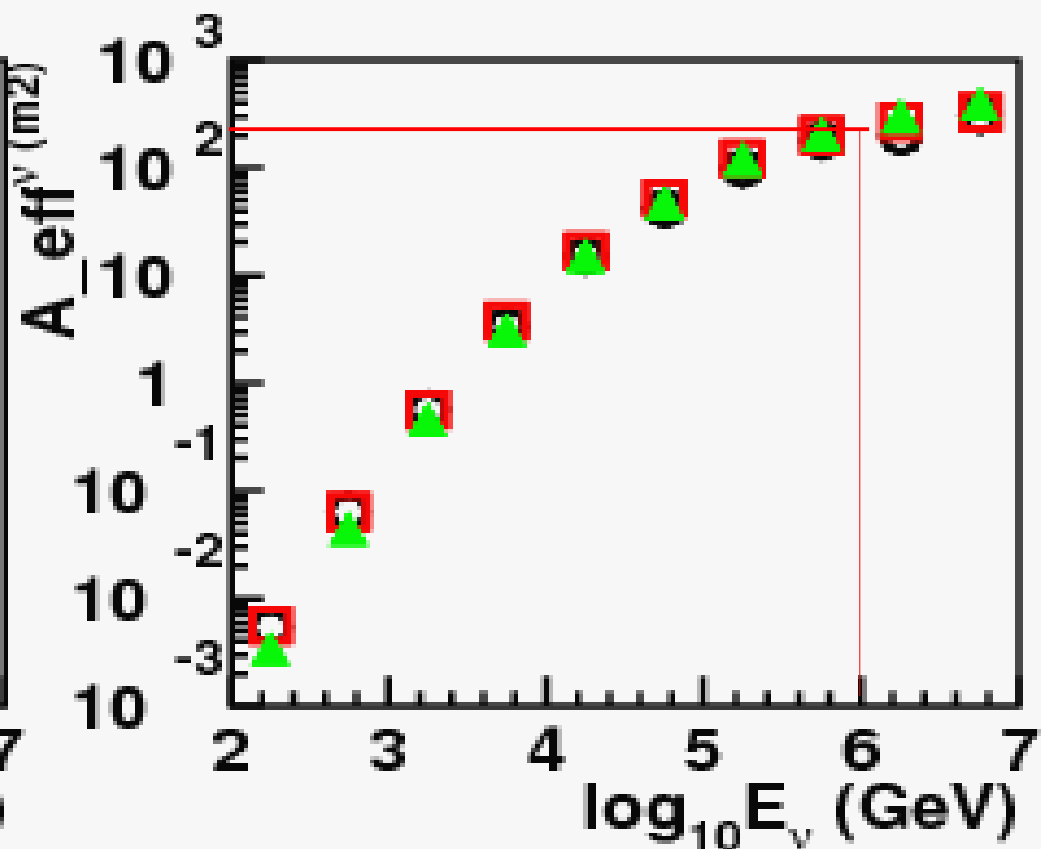
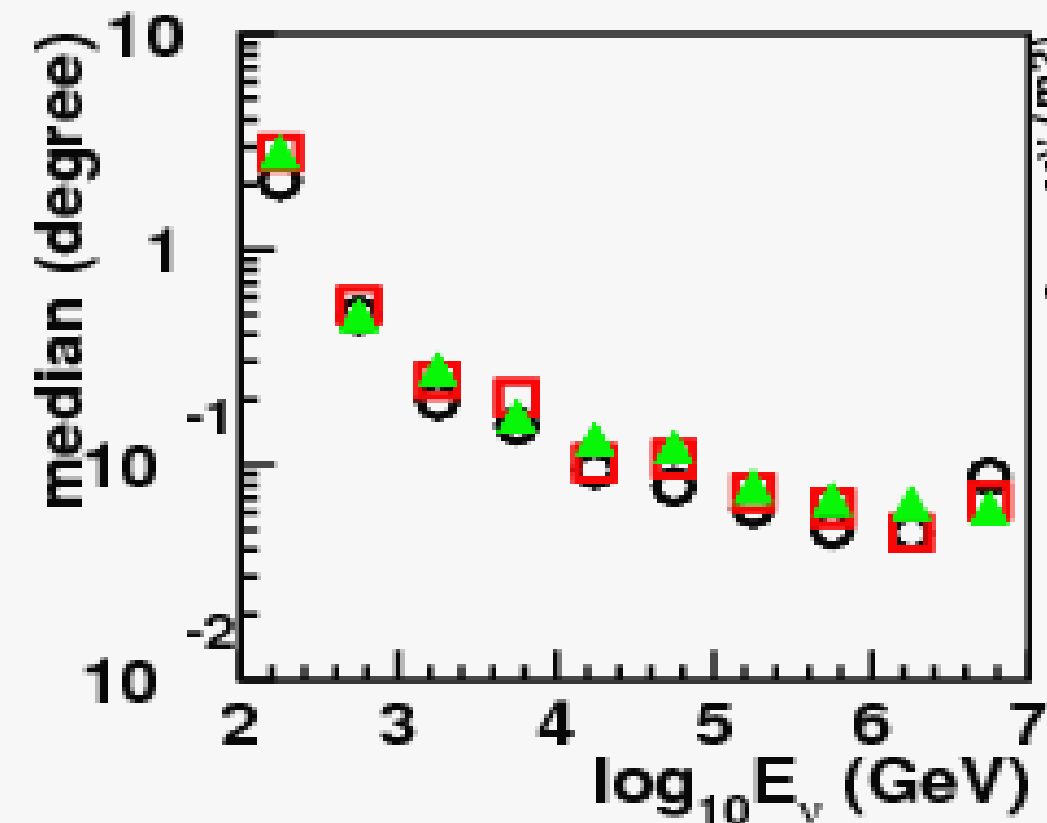
## Angular resolution and effective areas



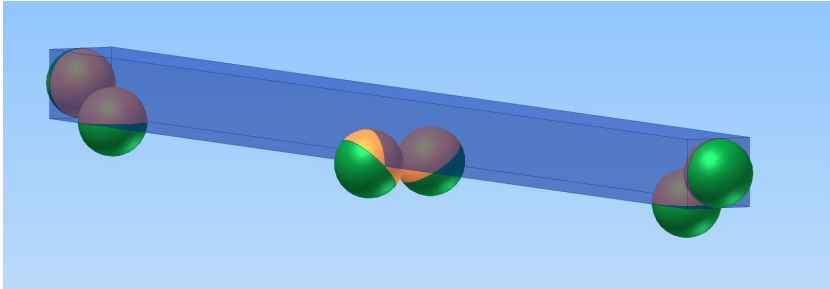
○ 130\_20\_40\_10  
(cut  $\Delta = -5.8$ )

□ 150\_20\_40\_10  
(cut  $\Delta = -5.8$ )

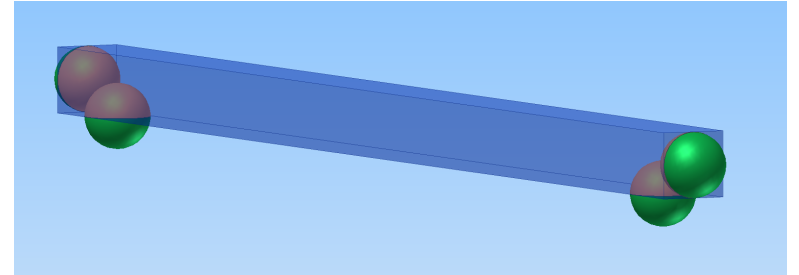
◻ 180\_20\_40\_10  
(cut  $\Delta = -5.2$ )



# PMTs/floor



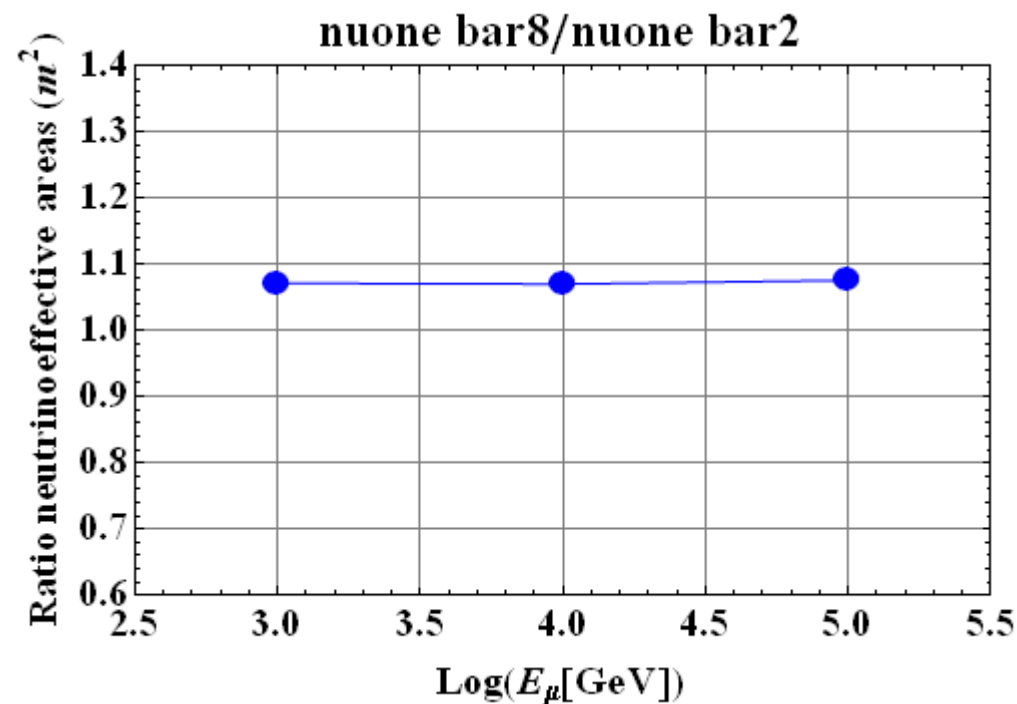
21



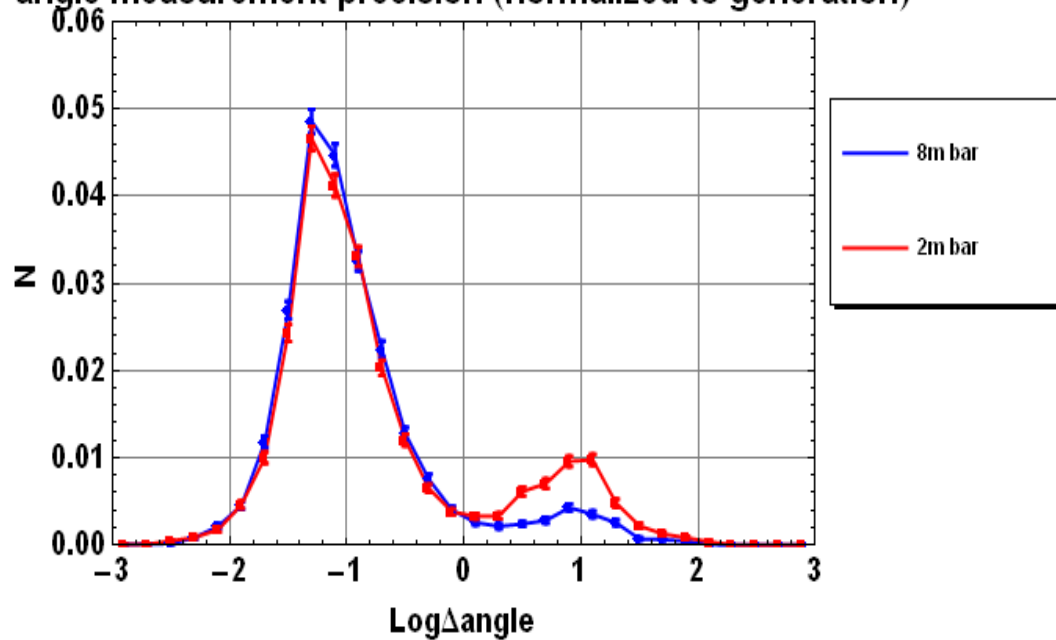
10" 35% QE

QE effect (23% - 35%) < 10%

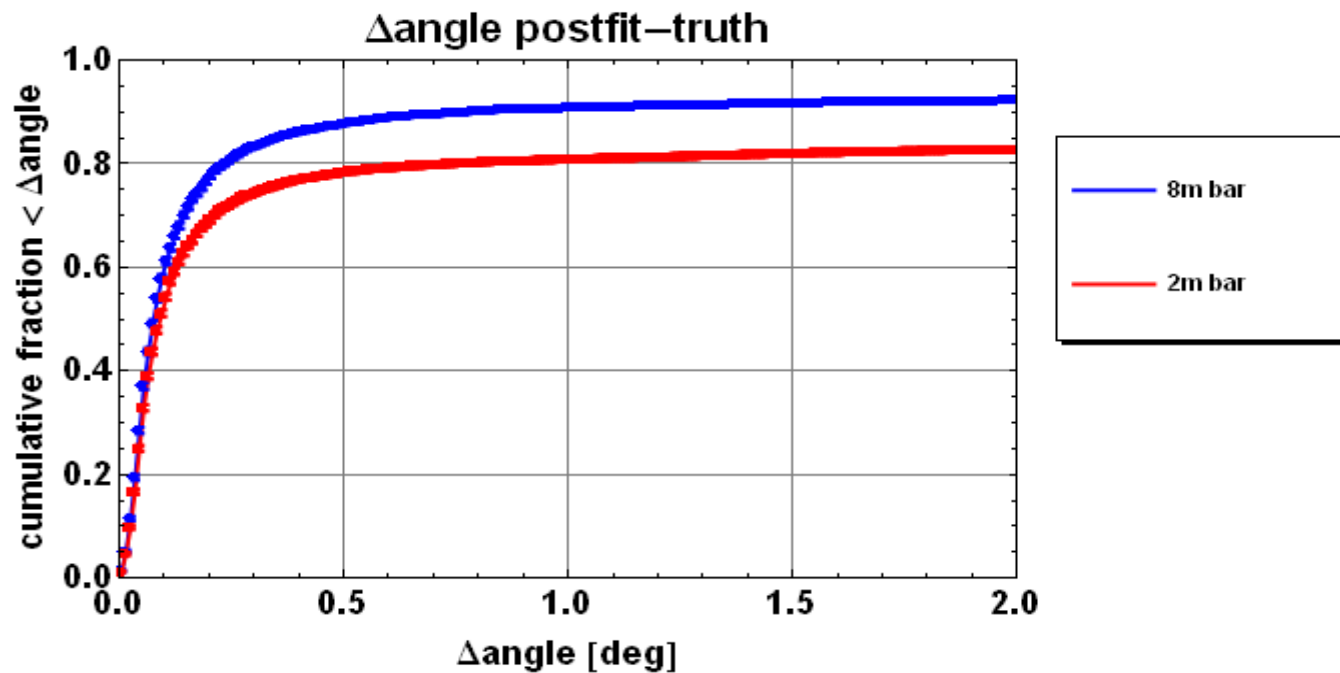
# Bar length effect



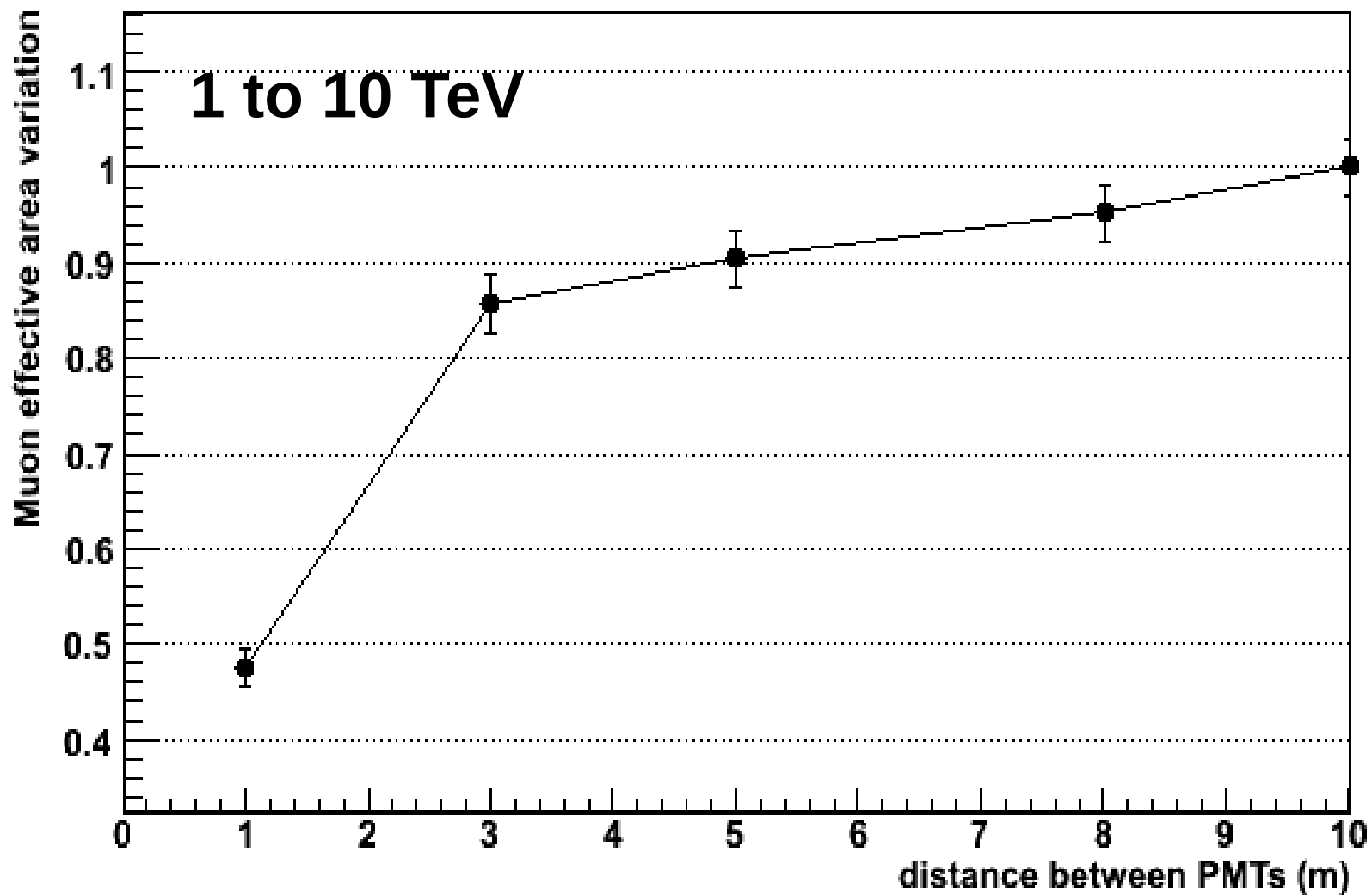
angle measurement precision (normalized to generation)



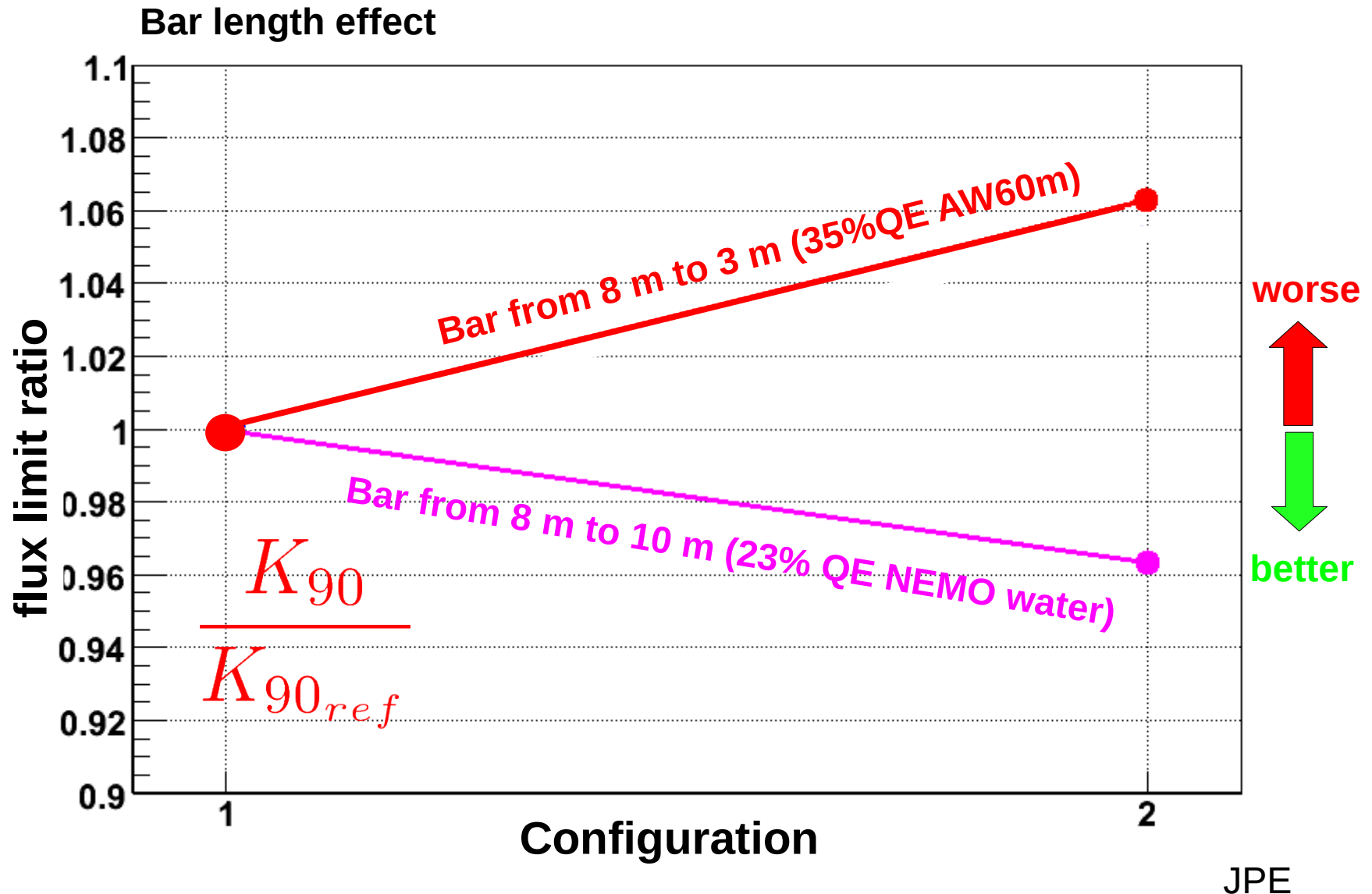
John



# Bar length effect



# Bar length effect

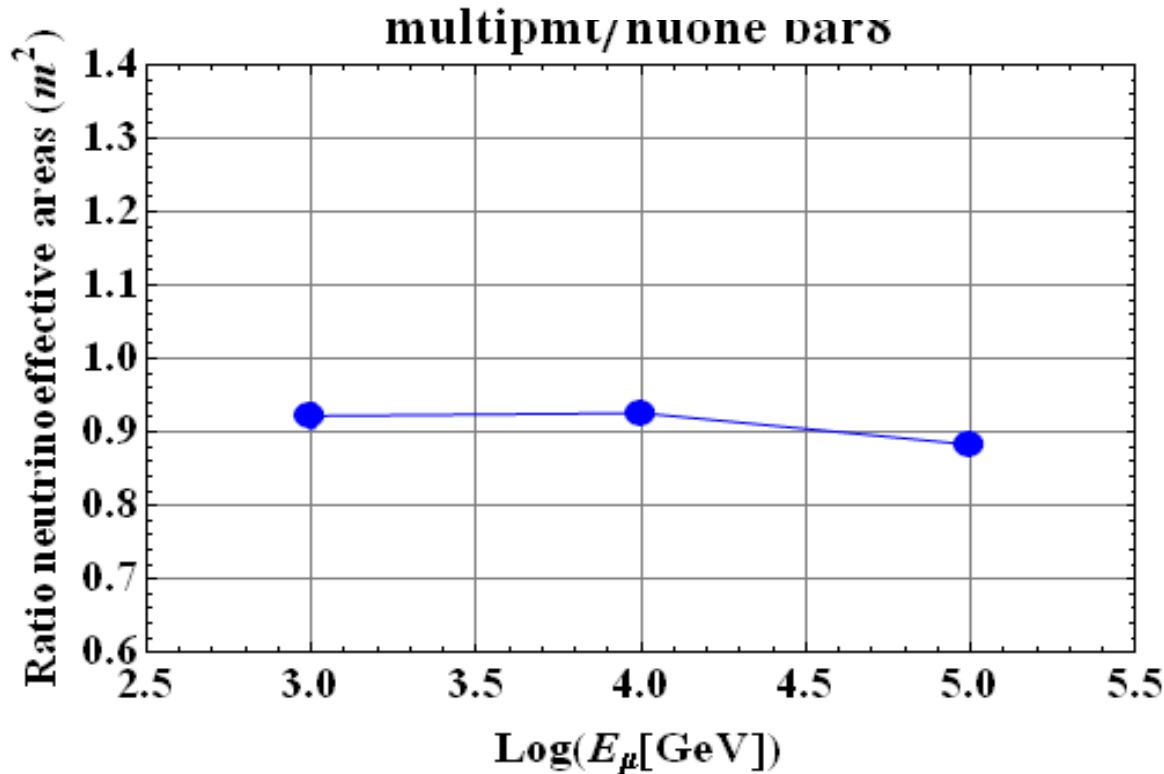
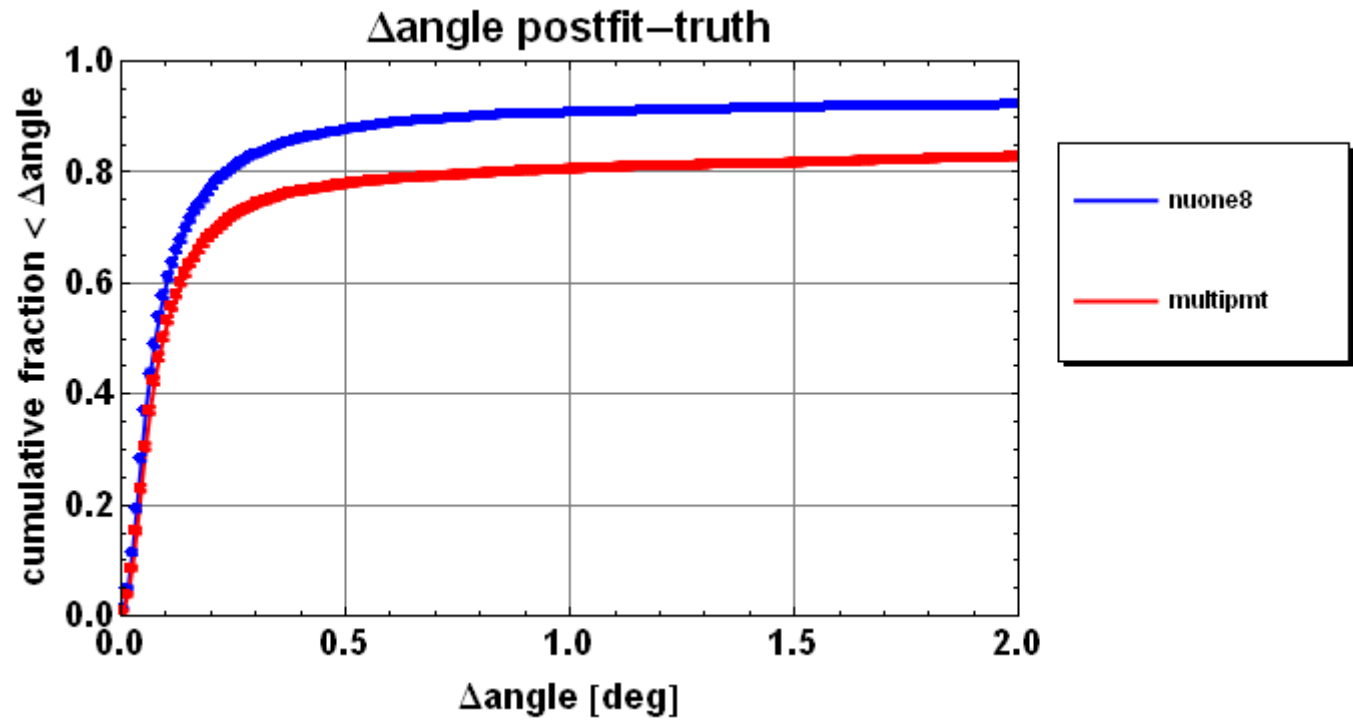
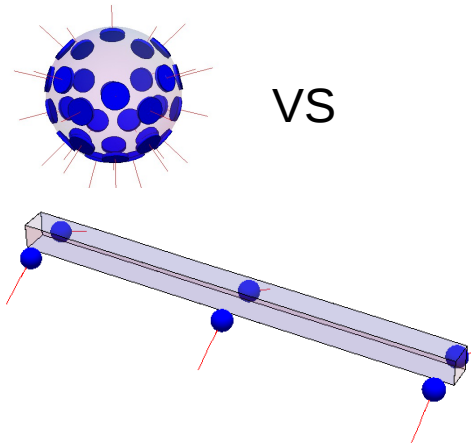


Bar length effect ~ 6% between 3m and 8m

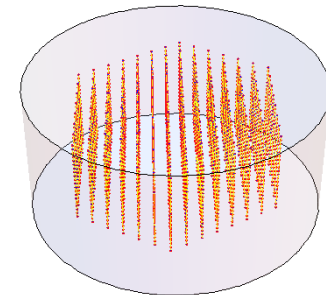


# Designs

John



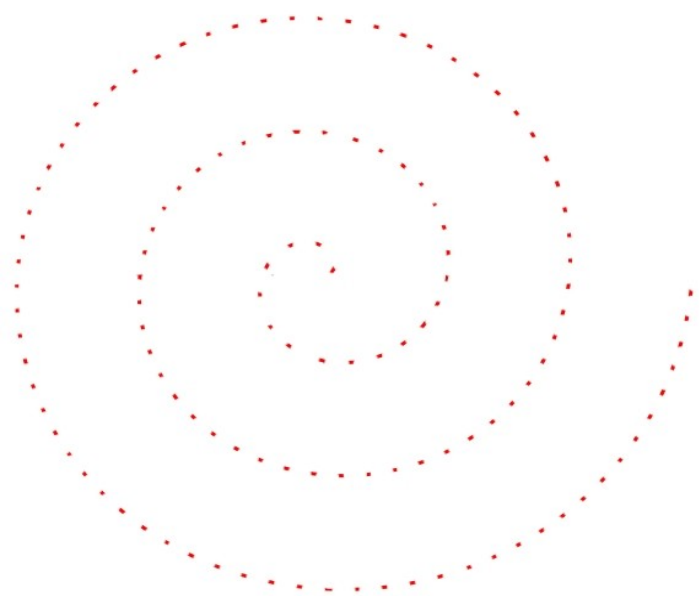
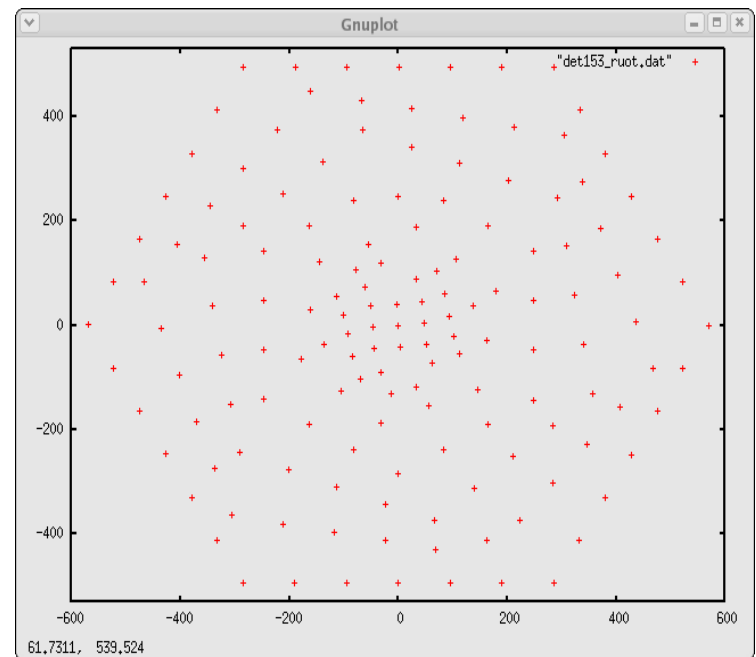
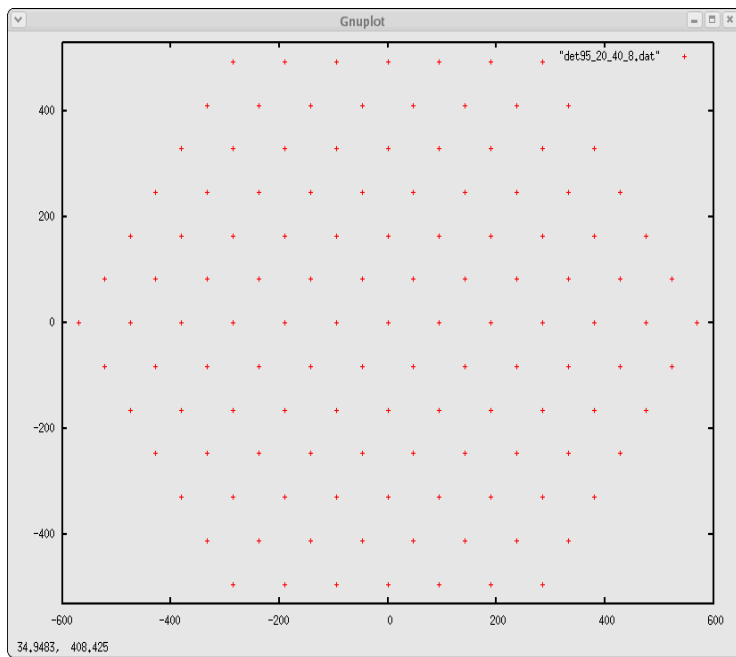
Mainly due to the volume difference :



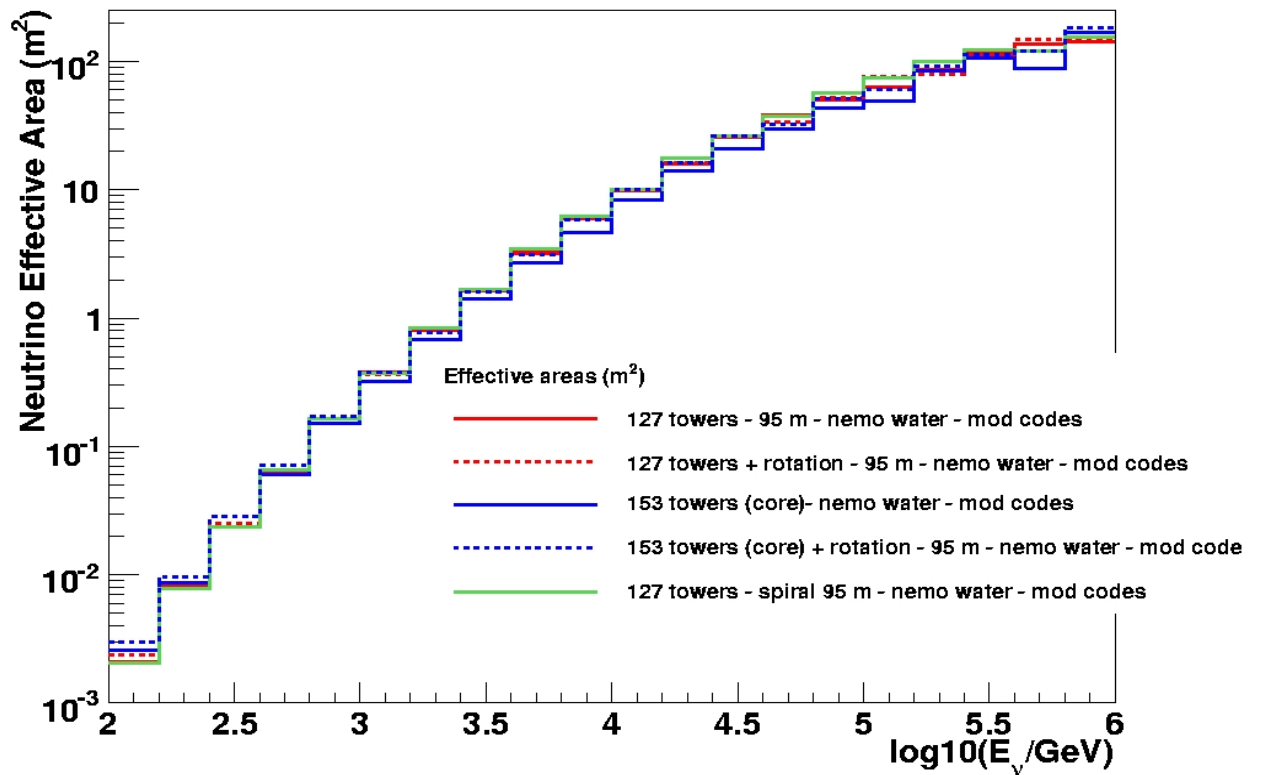
Volume SeaWiet  $<$   
volume NuOne

# Sea Layout

## Umberto



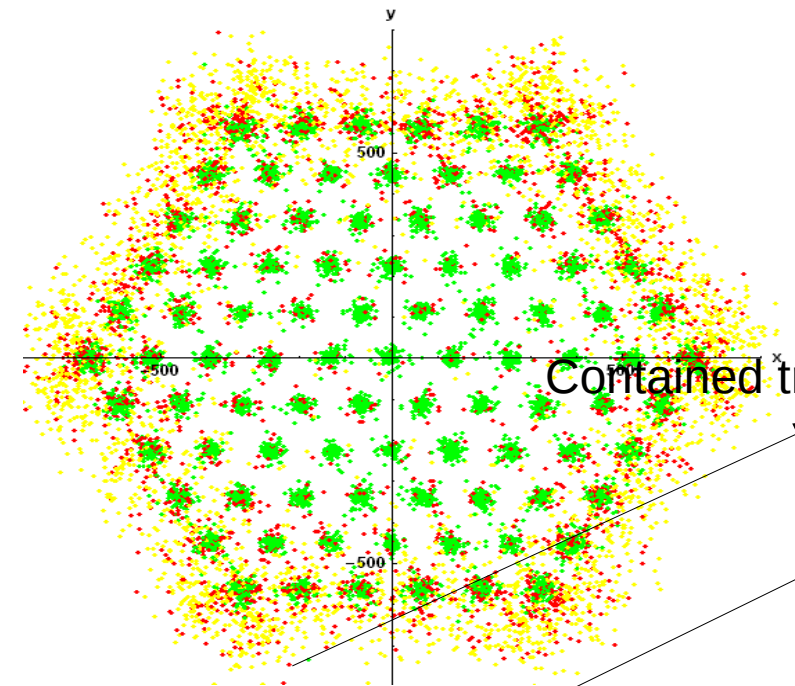
# Rather equivalent



Efficiency :

John

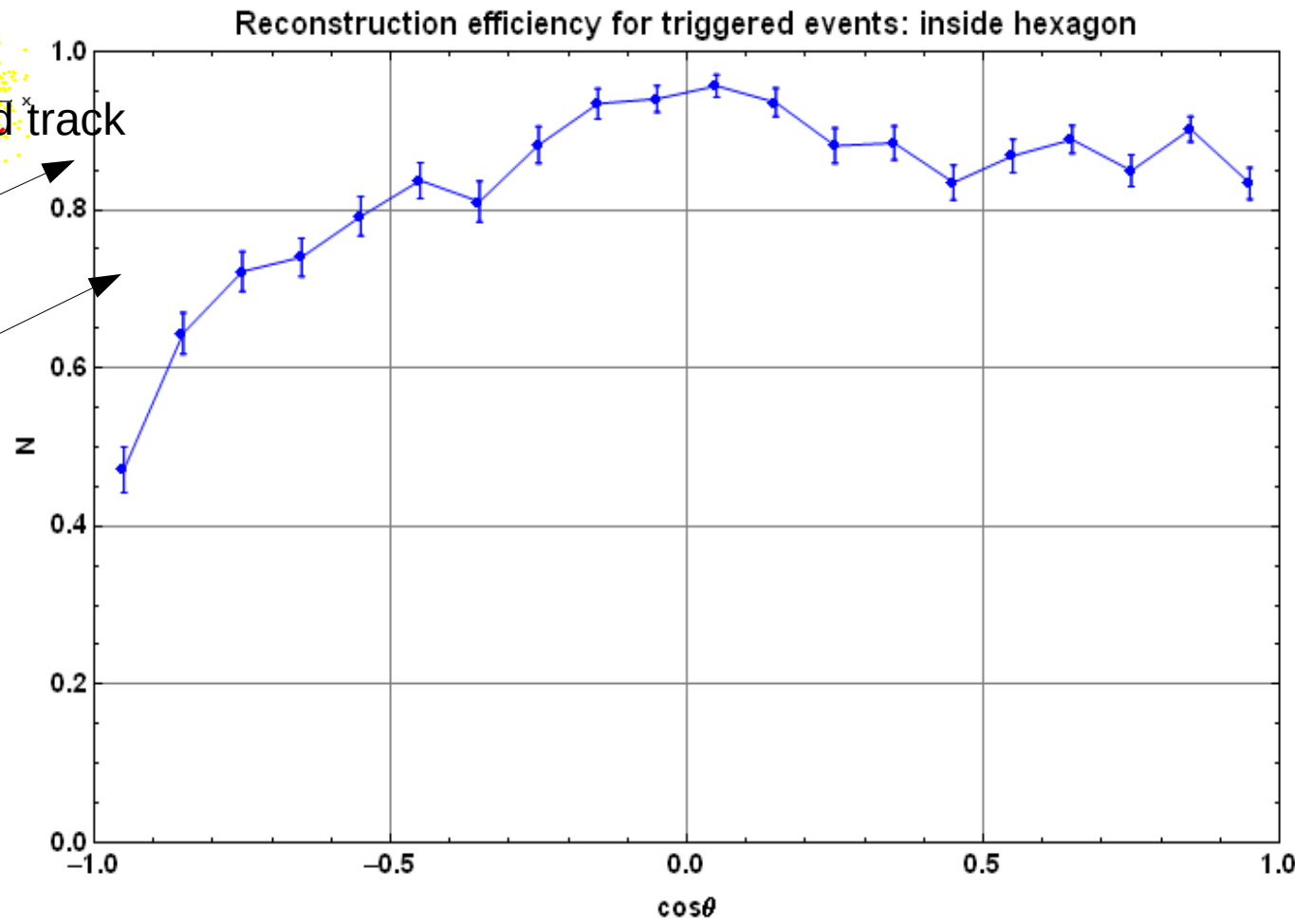
Useful estimator :



Not contained track

Contained track

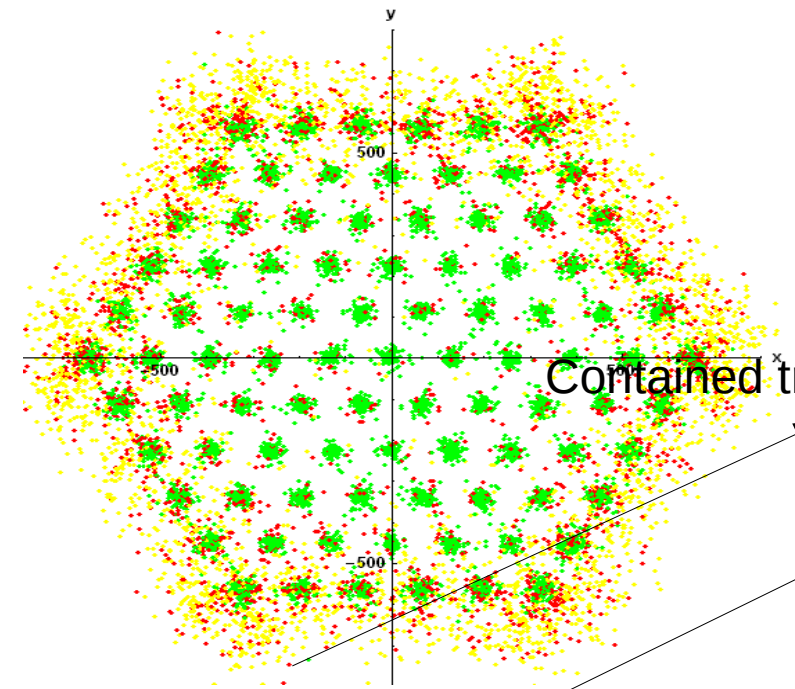
Use of the **muon** track



Efficiency :

John

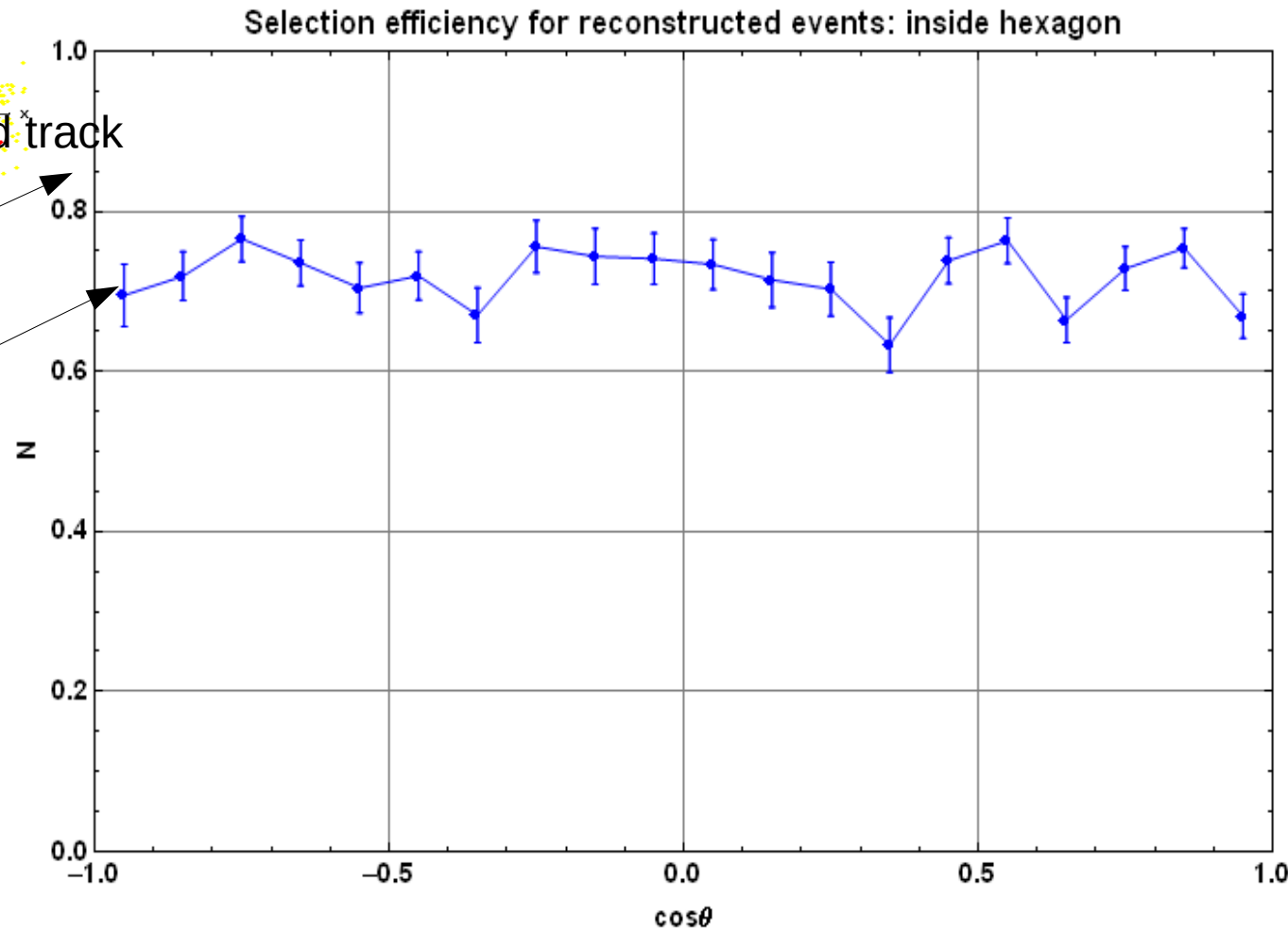
Useful estimator :



Contained track

Not contained track

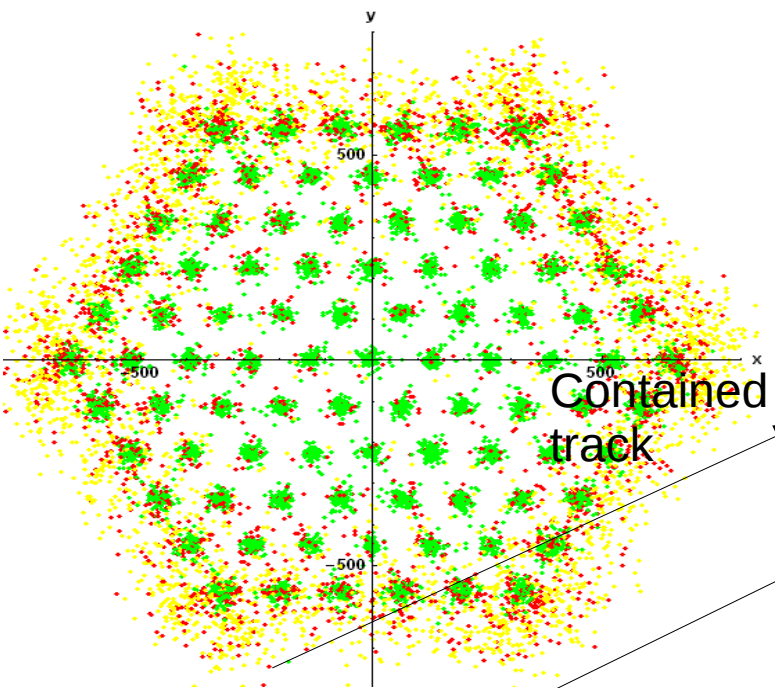
Use of the **muon** track



# Efficiency :

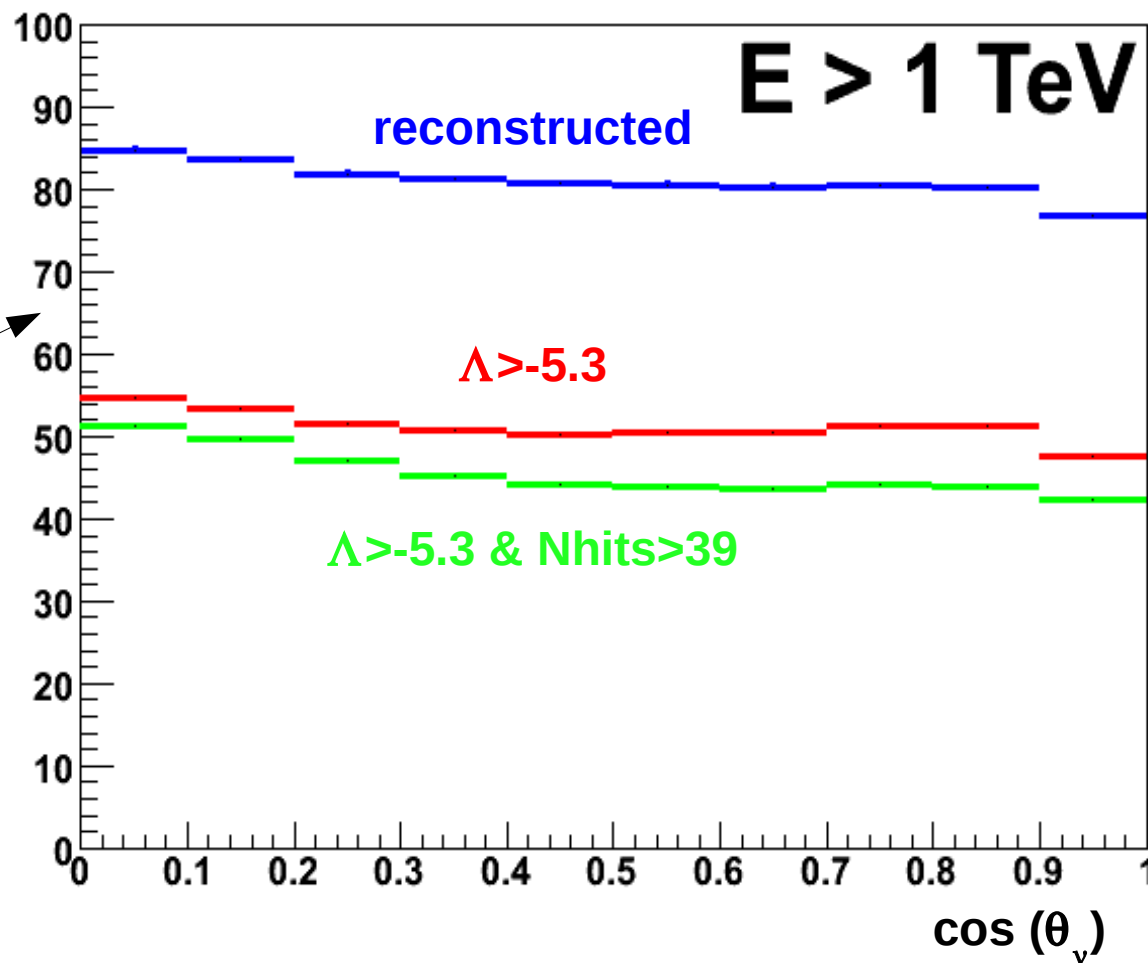
## Useful estimator :

“Well” contained events  
(here well means surrounded  
by at least 5 floors ie 30 PMTs)



Not contained track

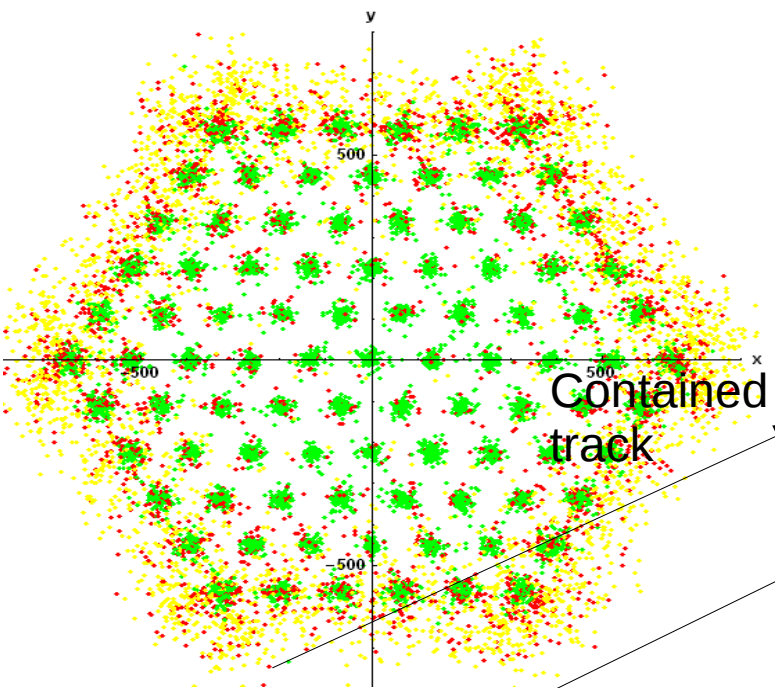
Use of the **neutrino** track



# Efficiency :

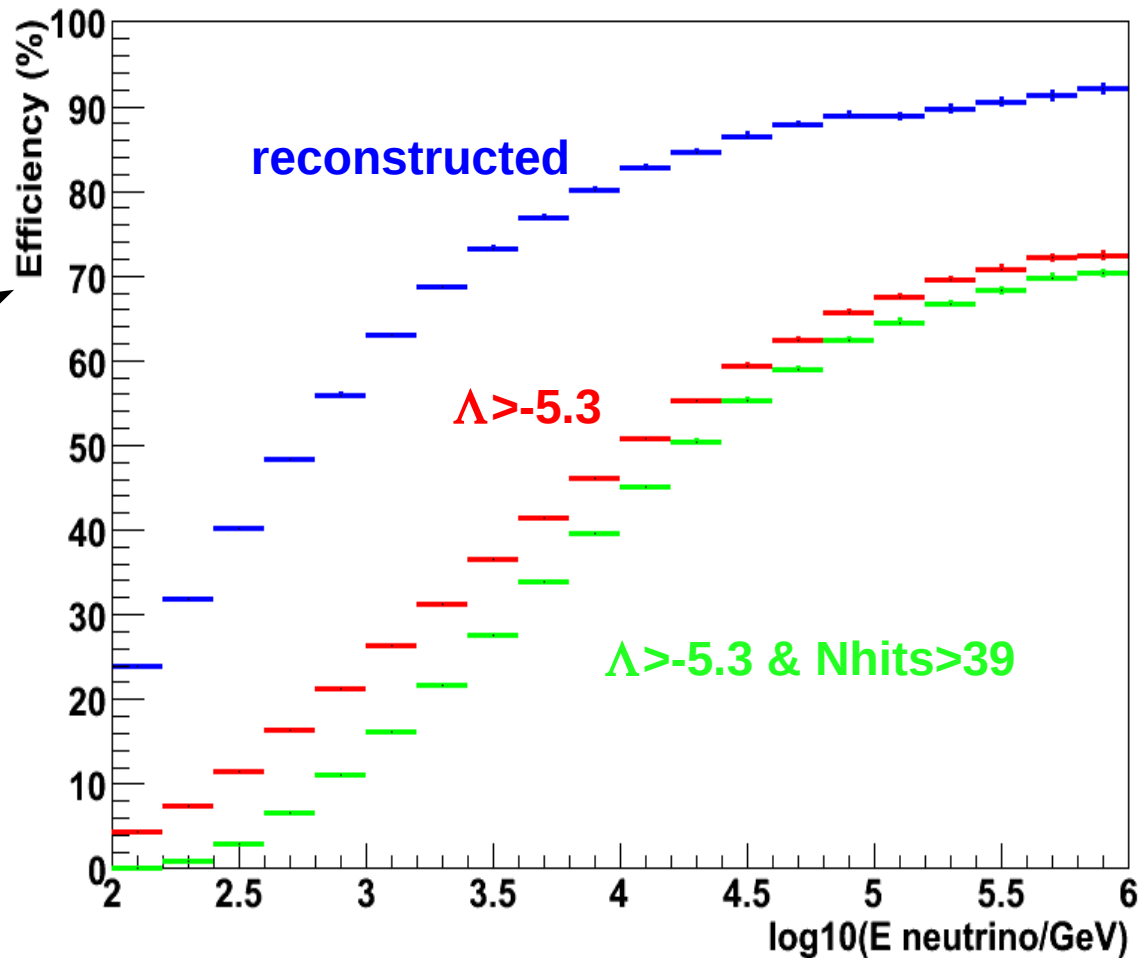
## Useful estimator :

“Well” contained events  
(here well means surrounded  
by at least 5 floors ie 30 PMTs)



Not contained track

Use of the **neutrino** track



**On-going :**

**KM3Tray**

**GEANT4 simulation**

**FAST Simulation**

**Next session in Athens**

## **Conclusions :**

NuOne is near to the final optimization

Concerning Physics performances,  
designs are not so different :  $O(10\%)$

The cost will be a crucial point.

A common detector will be passed through the  
different chains for sanity check and comparison  
of the sensitivity computation : “ANTARES like” with  
defined environmental parameters and cuts on the  
same variables (Aart reco)

Checks of “asymptotic detectors” for sanity.