

MEMPHYS Test Bench

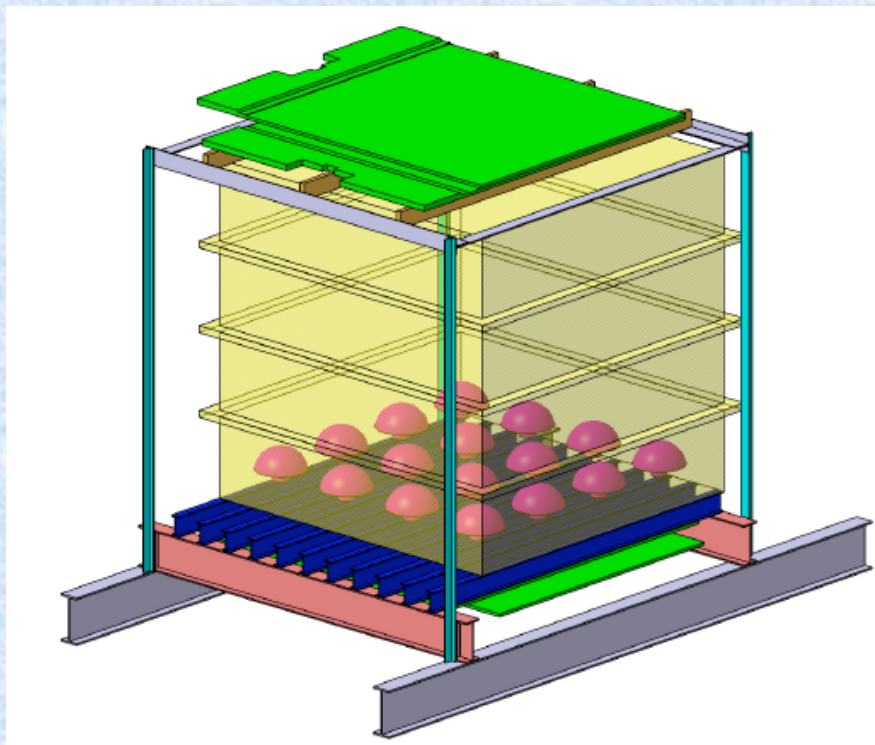
MEMPHYNO



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Paolo Agnes – *Univeristà degli Studi di Pavia*

MEMPHYNO

Test bench for data acquisition solutions for
future large-scale detectors



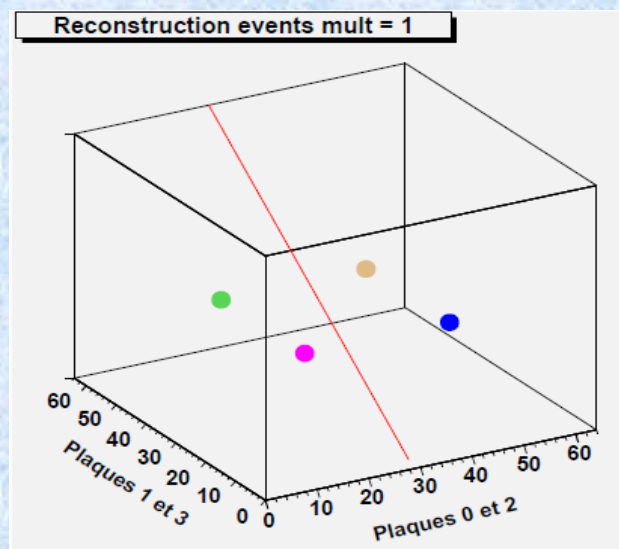
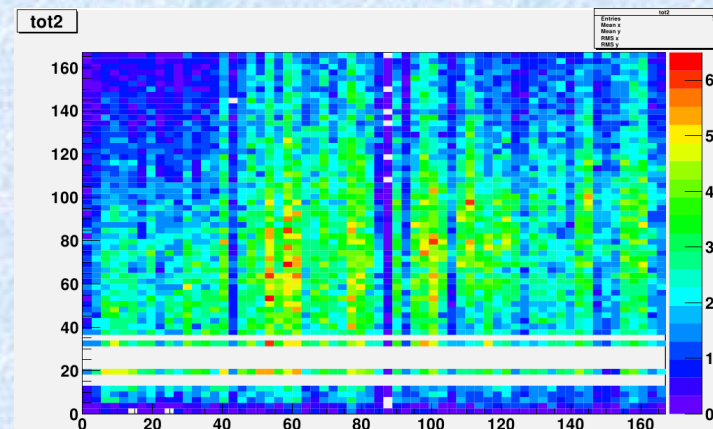
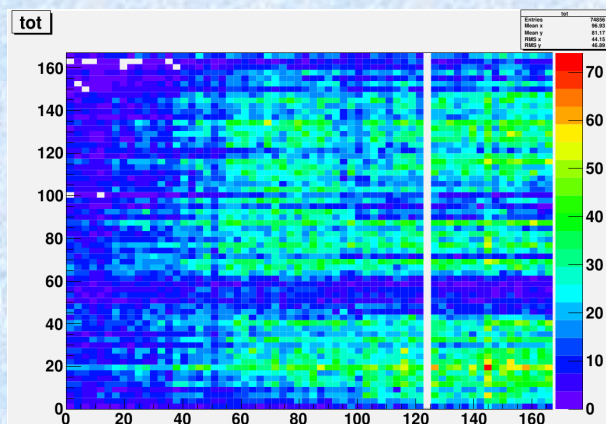
Green : hodoscope
Pink : PMm2 matrix

- 8 m³ water tank
(2m x 2m x 2m)
- hodoscope (green)
composed of 4
scintillator plates
- Photomultiplier
matrix (pink)

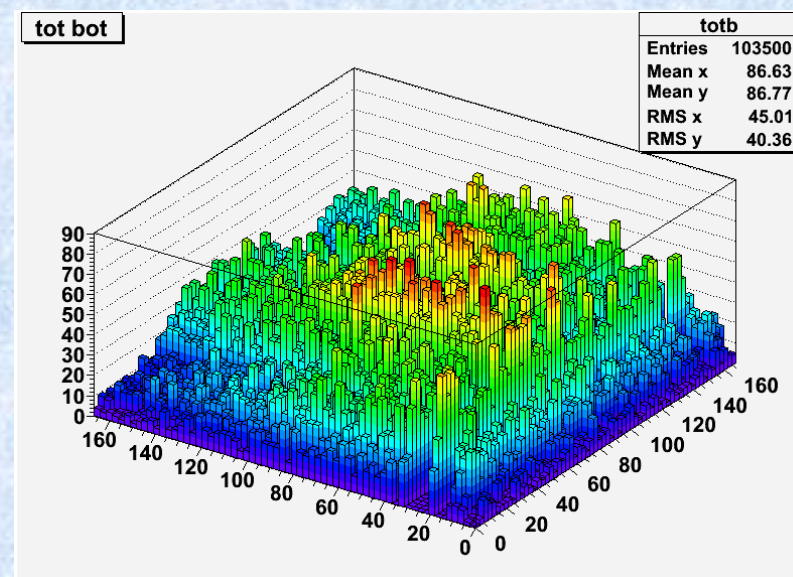
Hodoscope

- 4 scintillator planes
- 100 000 muon reconstructed trajectories
- LabView interface for acquisition
- CERN root for data analysis

Hodoscope Signal Analysis (1)

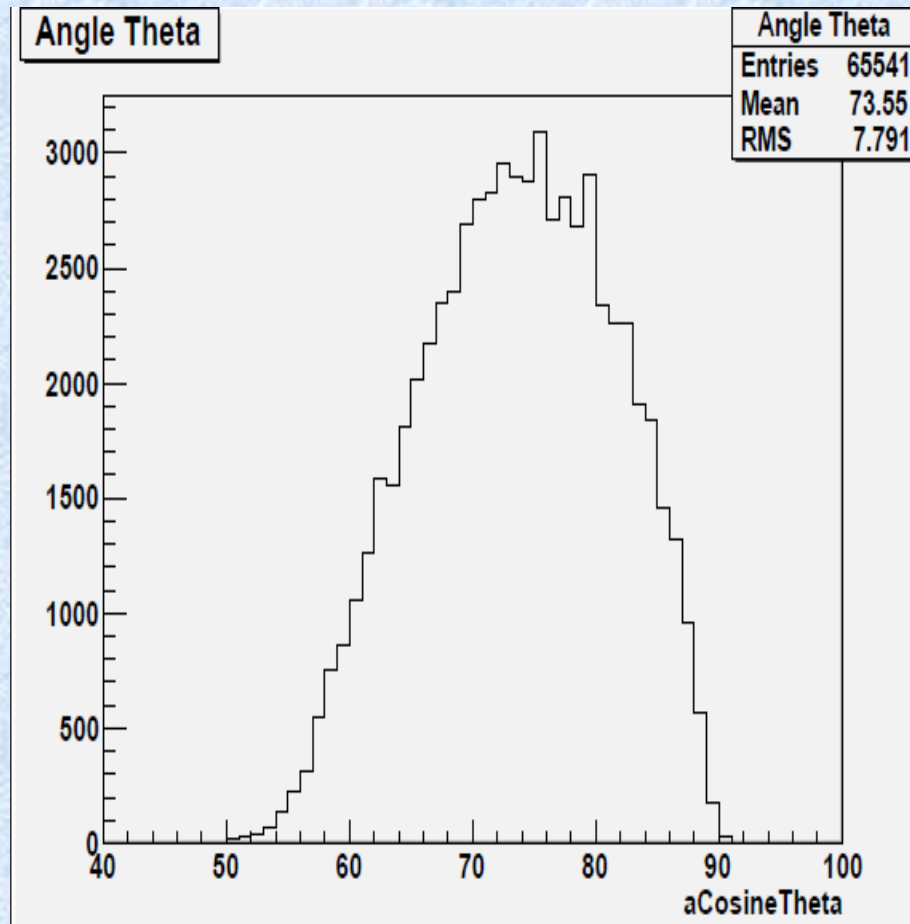


Muon trajectory

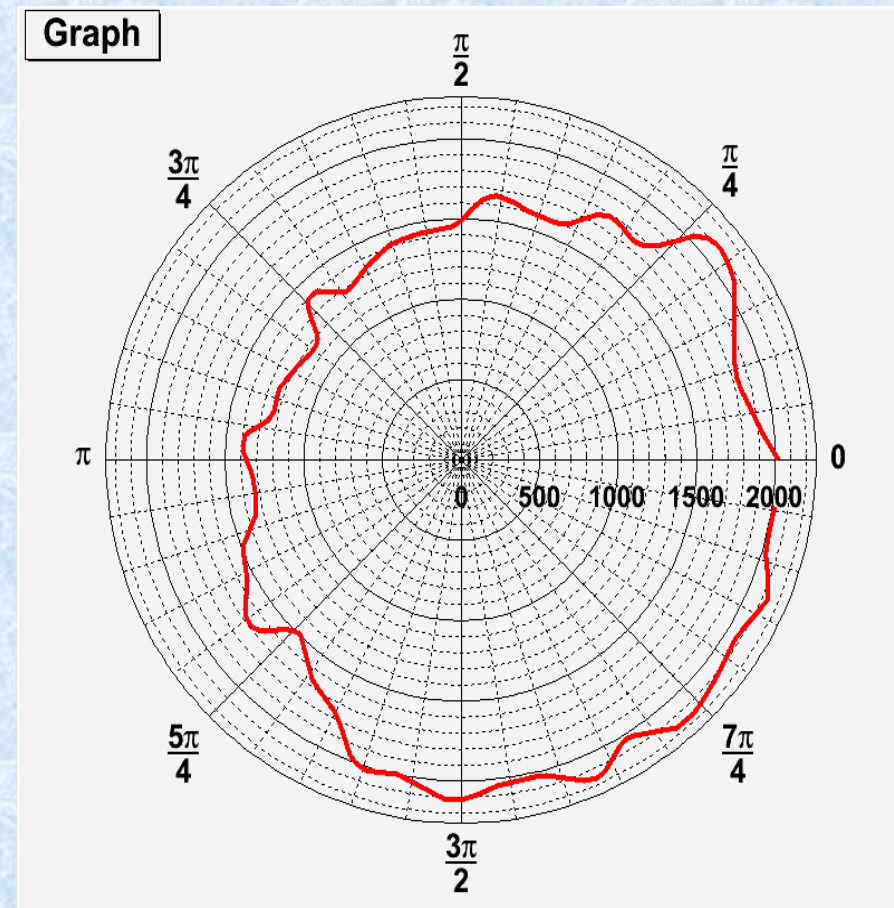


Event count on bottom hodoscope

Hodoscope Signal Analysis (2)

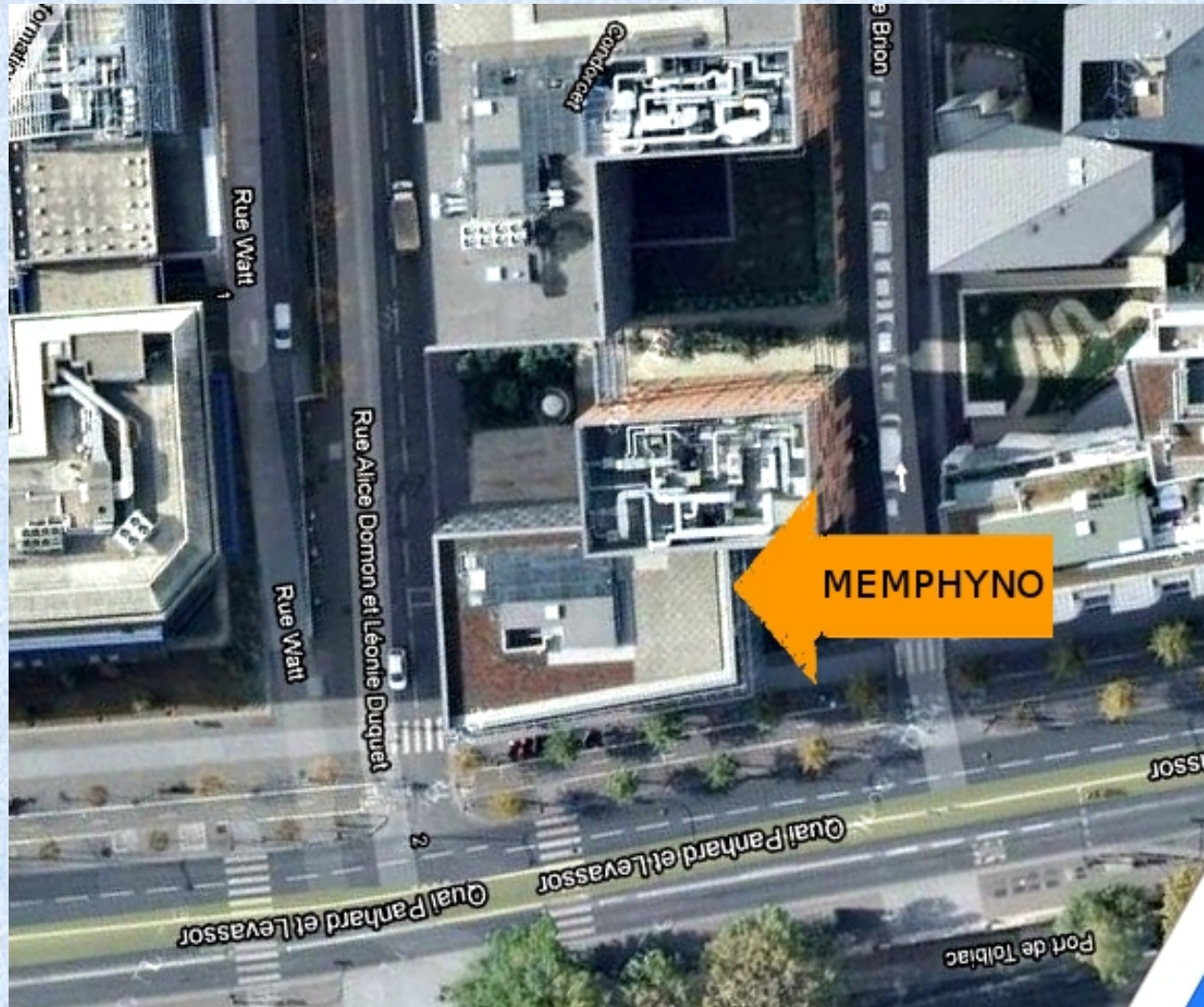


Theta : azimuthal angle

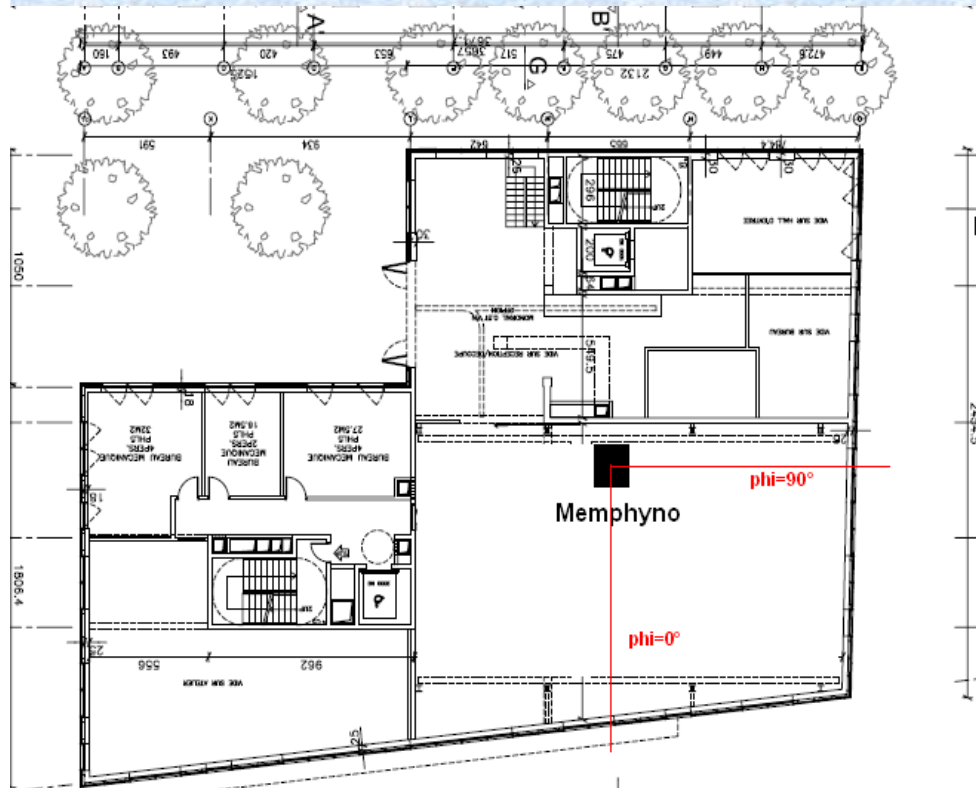


Phi : longitudinal angle

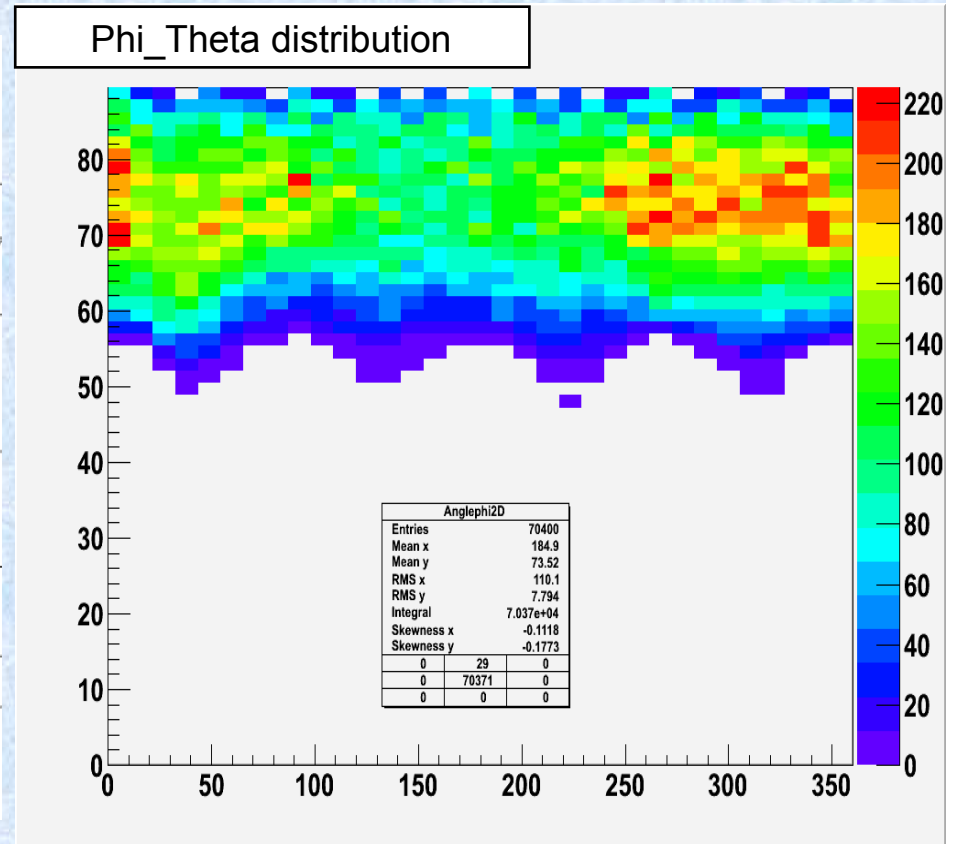
Hodoscope Signal Analysis (2)



Hodoscope Signal Analysis (4)

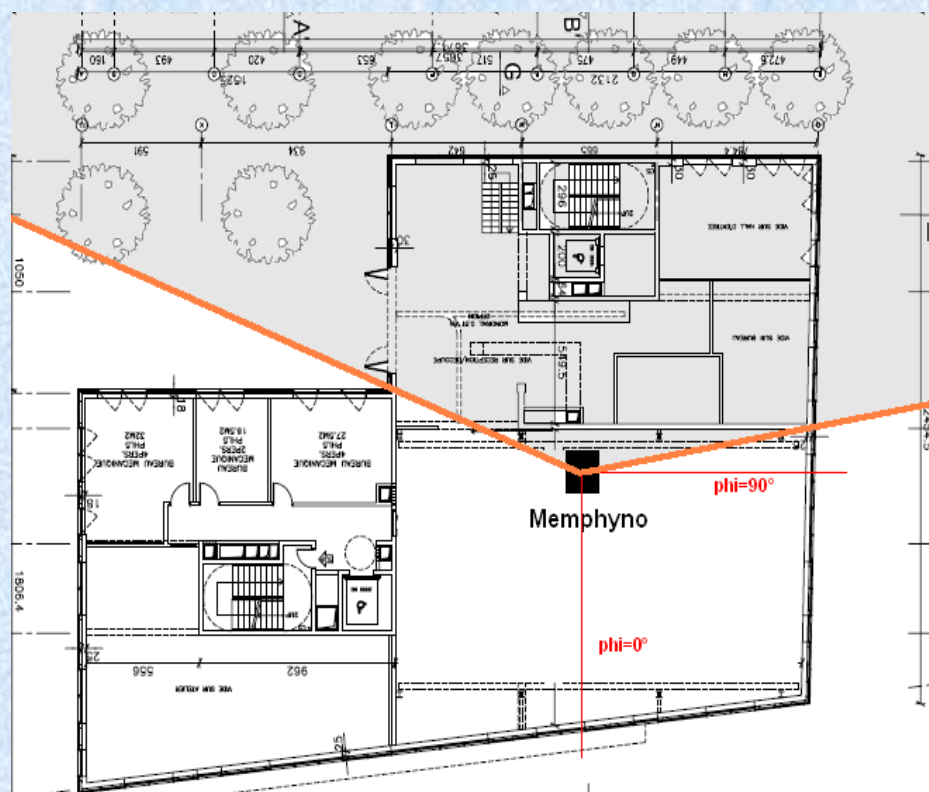


Condorcet building with Memphyno
at ground floor

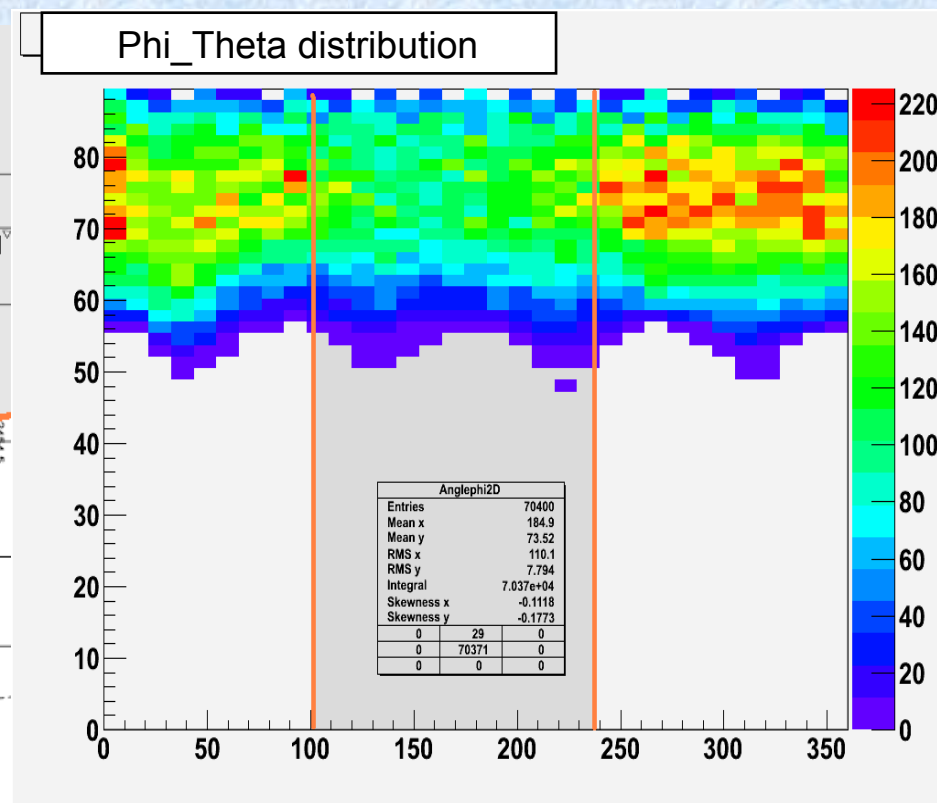


Phi vs Theta
and normalized phi ditribution

Hodoscope Signal Analysis (5)



Condorcet building with Memphyno
at ground floor



Phi vs Theta
and normalized phi ditribution

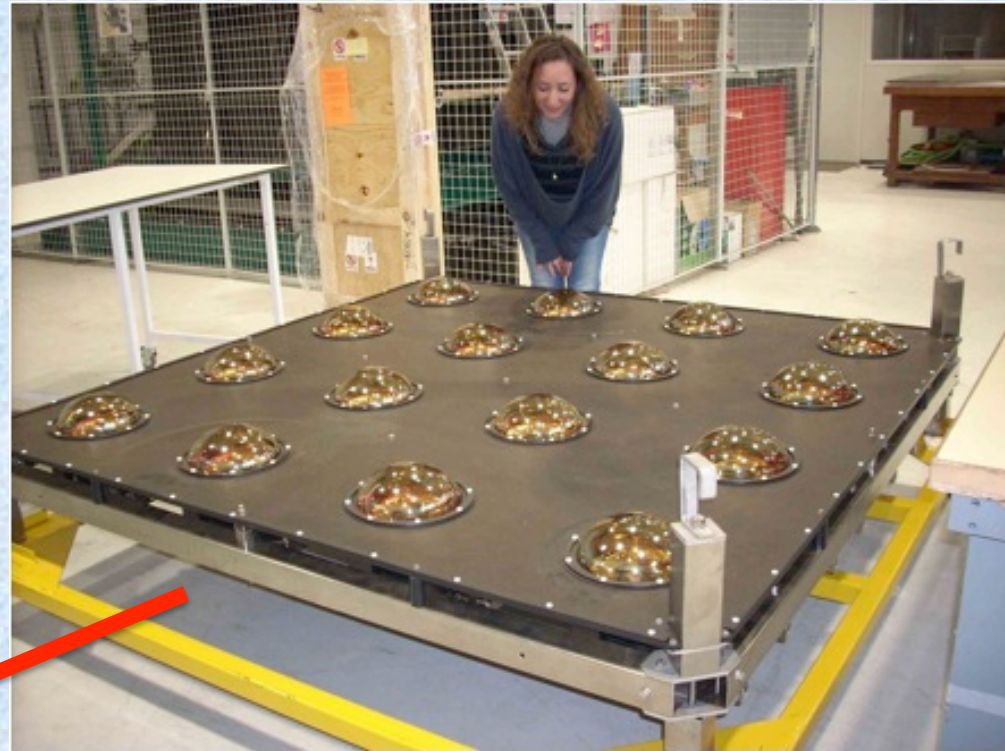
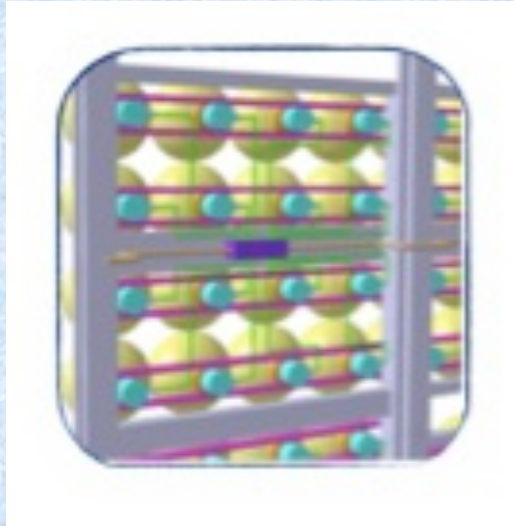
The 9 floor building stops muons

PMm²

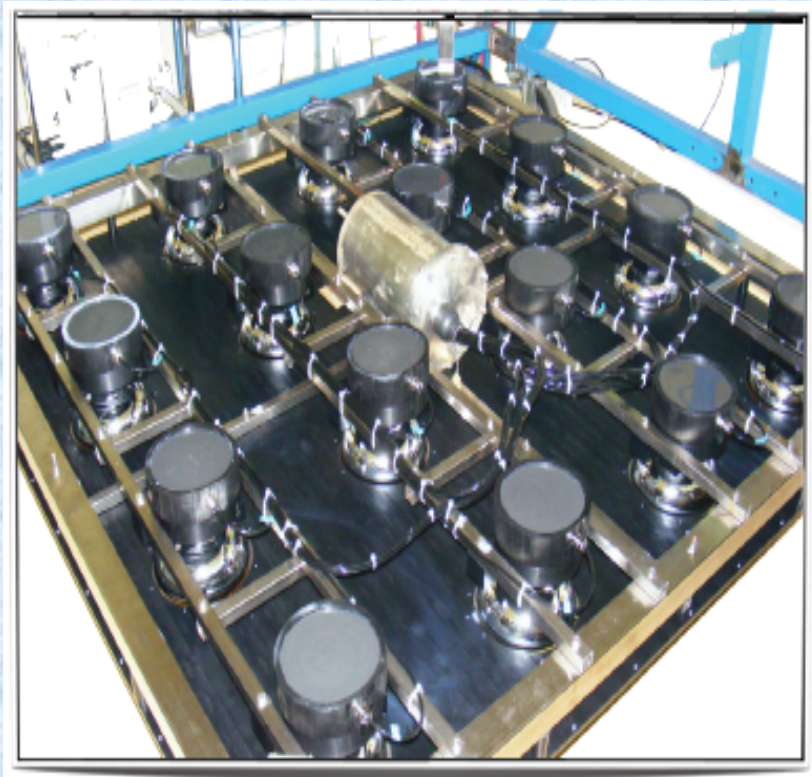
Grouped electronics to reduce the number of power supply and readout channels (and cables) in future large-scale detector with high number of PMTs (MEMPHYS, LENA, Glacier).

- 16 PMTs matrix 100 m submarine cable
- Submarine and surface acquisition card built at IPNO
- First tests in APC

MEMPHYNO PMm²



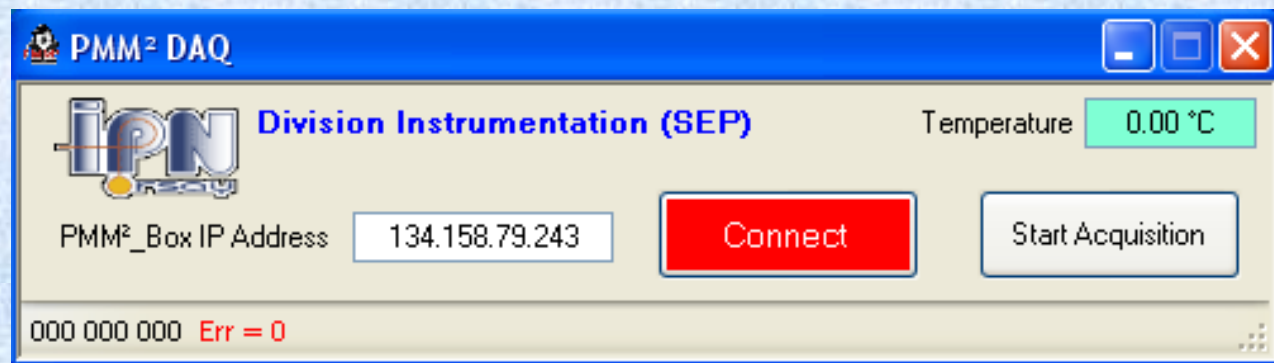
Pmm² data acquisition



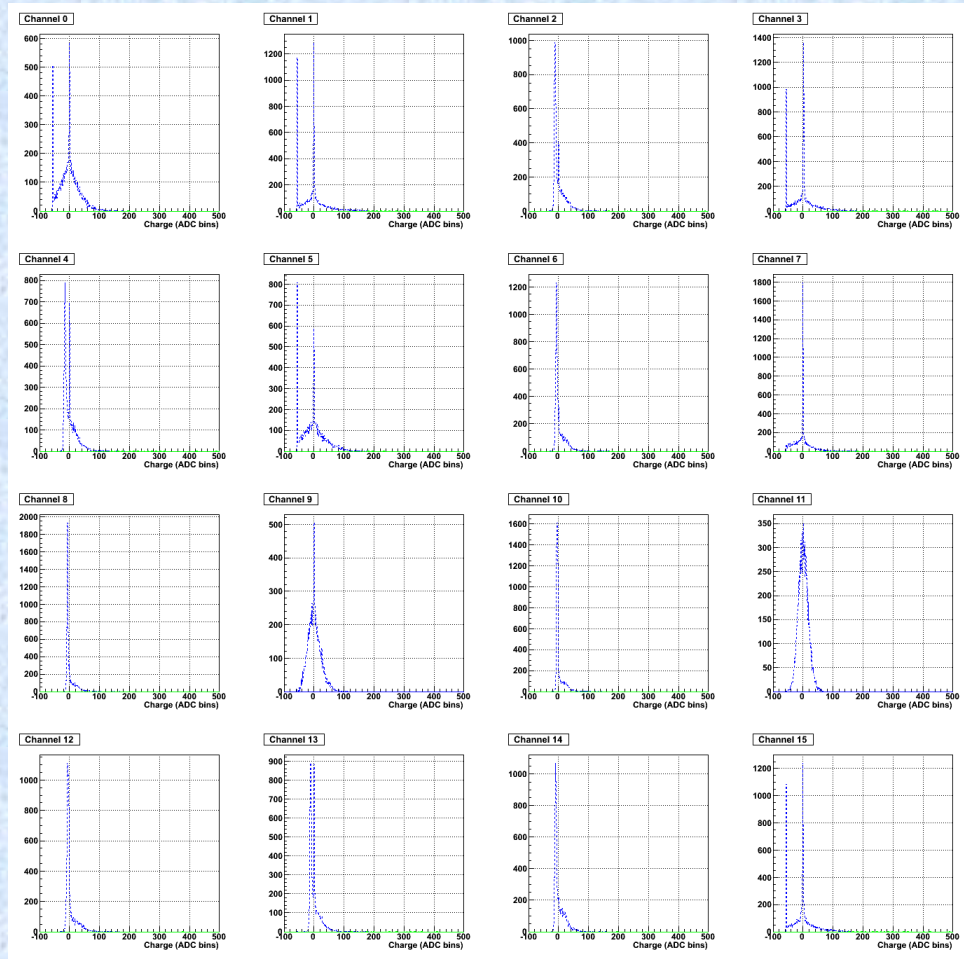
Pmm² matrix



Surface card



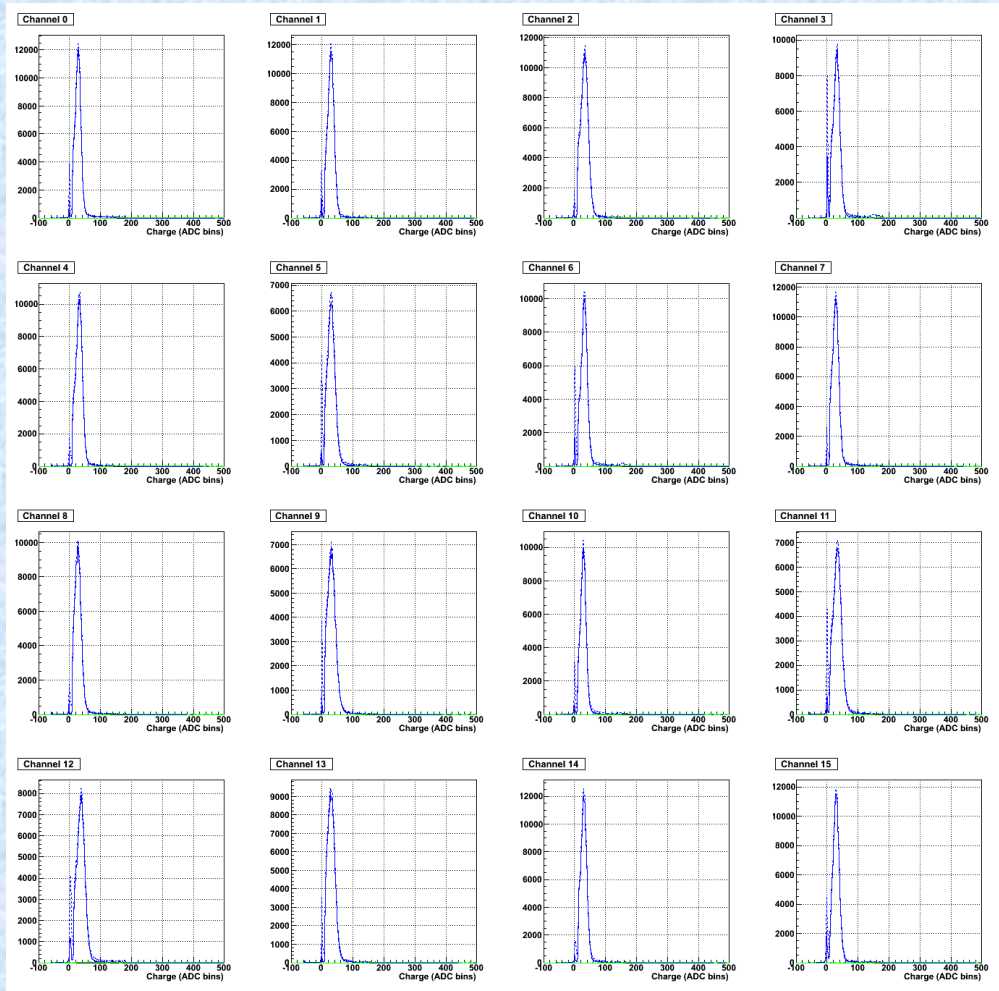
PMm² Signal Analysis (1)



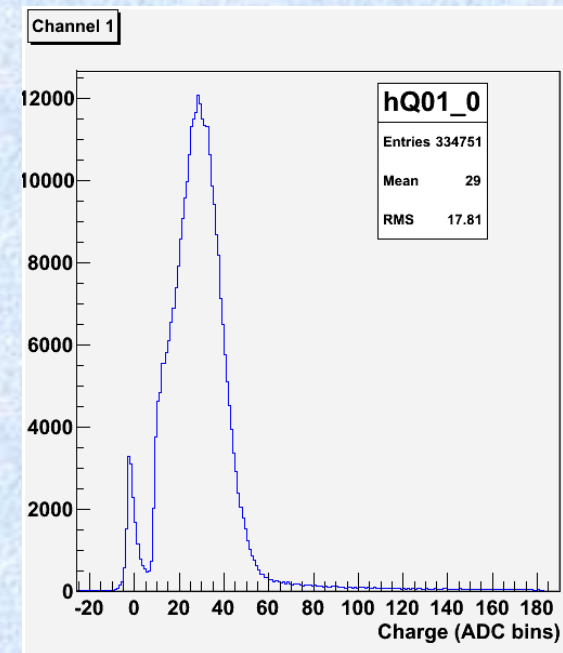
Pedestal evaluation

16 PMT channel, charge collection, **empty** tank

PMm² Signal Analysis (2)



16 PMT channel, charge collection



One channel charge collection

Outlook

- Events Reconstruction identification in matrix
- Time correlation between Hodoscope and PMm^2
- Several cards