

MPGD2009, June 12-14

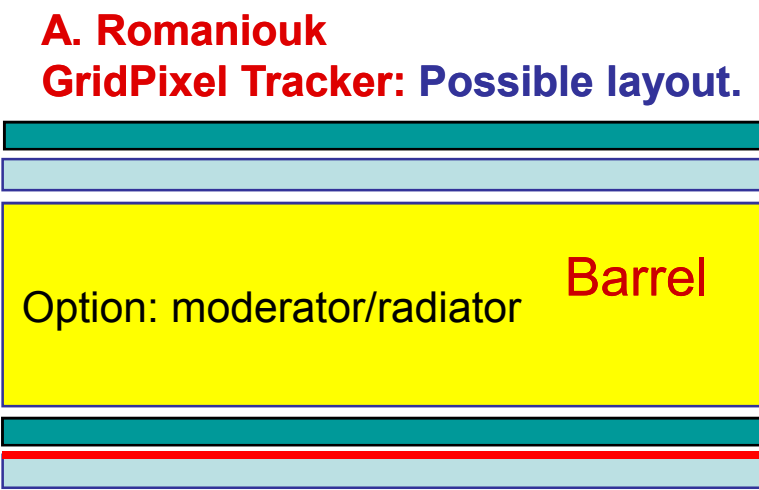
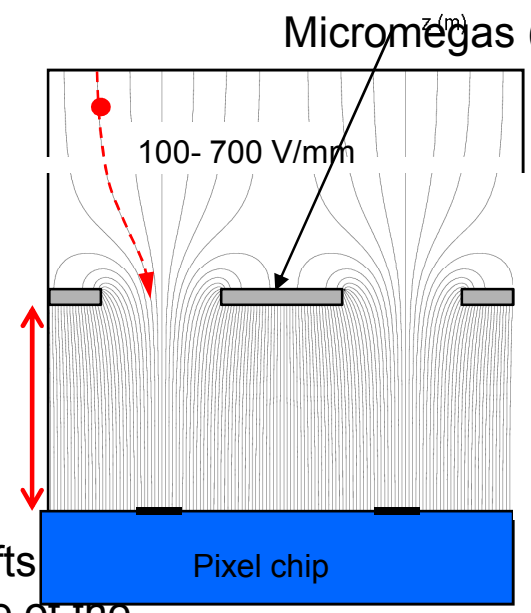
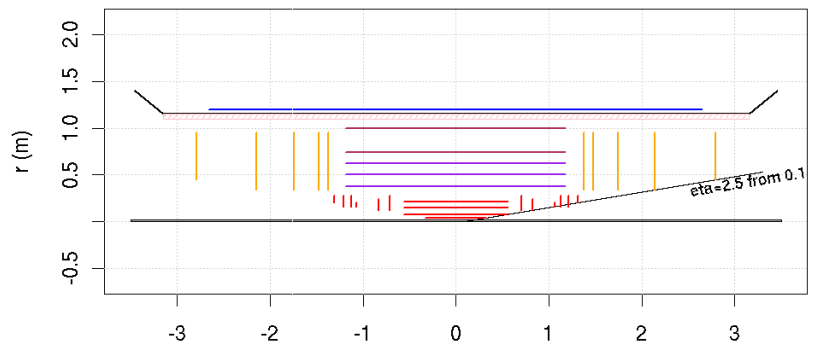
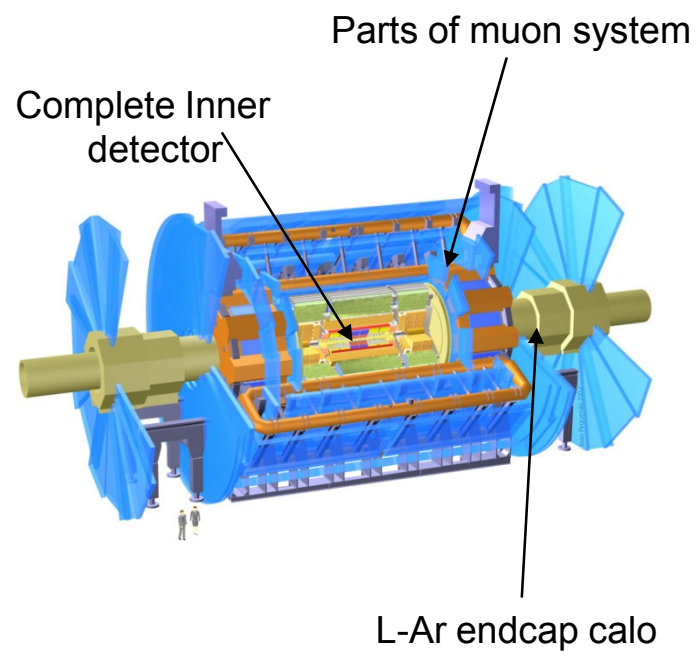
Orthodox Academy of Crete





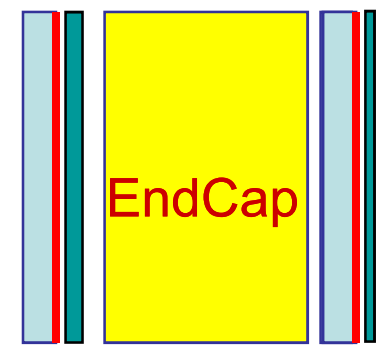


- ◆ Baseline: planar silicon, Alternatives 3D silicon, Diamond,
- ◆ GOSSIP



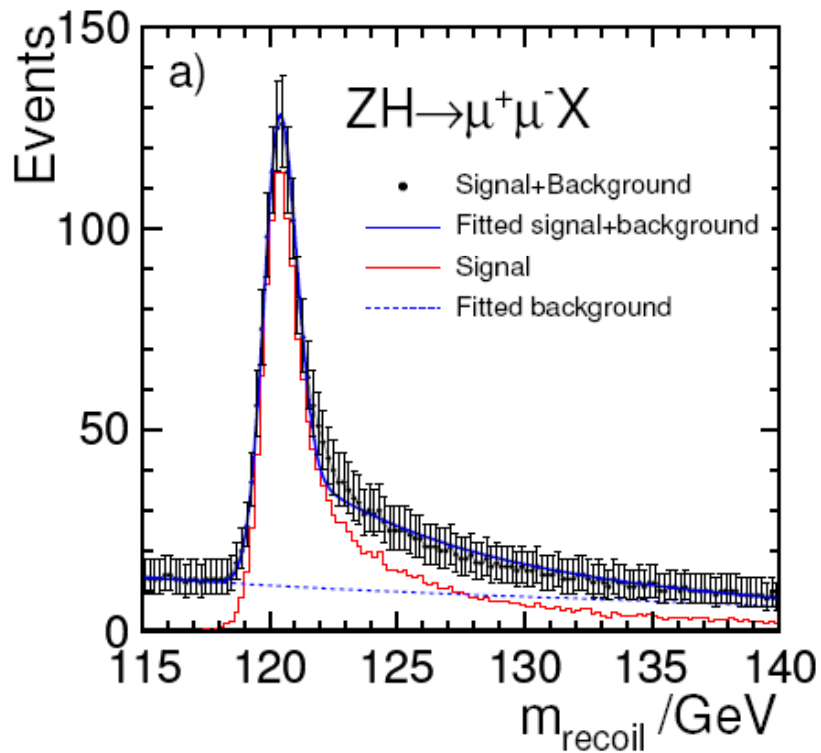
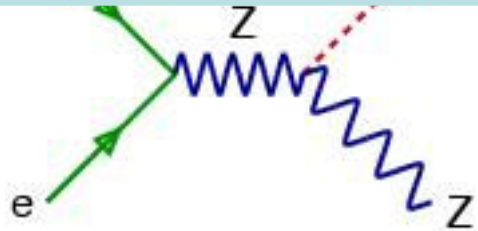
Gaseous pixel detector

- Narrow drift gap (~ 1 mm)
- Electron from traversing particle drifts towards grid and is focused into one of the holes
- Thereafter a gas avalanche is induced ending at the anode pad of the pixel chip

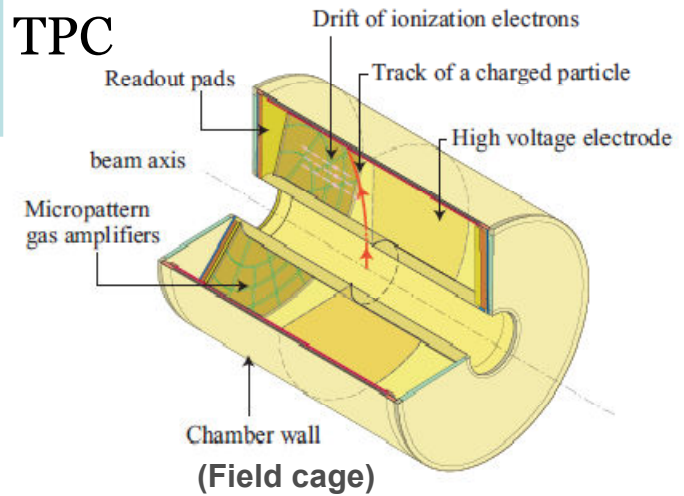


Linear Collider Physics and Detectors

C. Desch

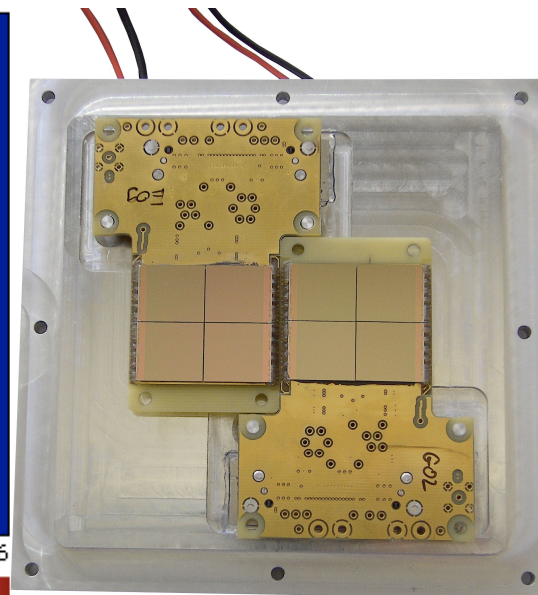
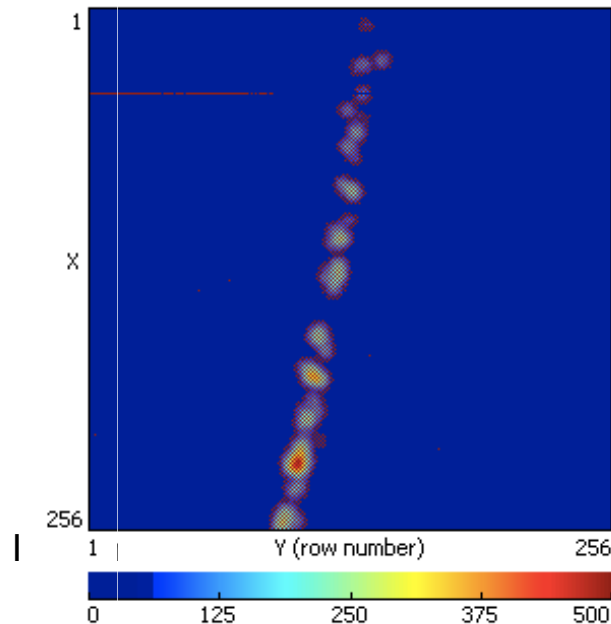


TPC



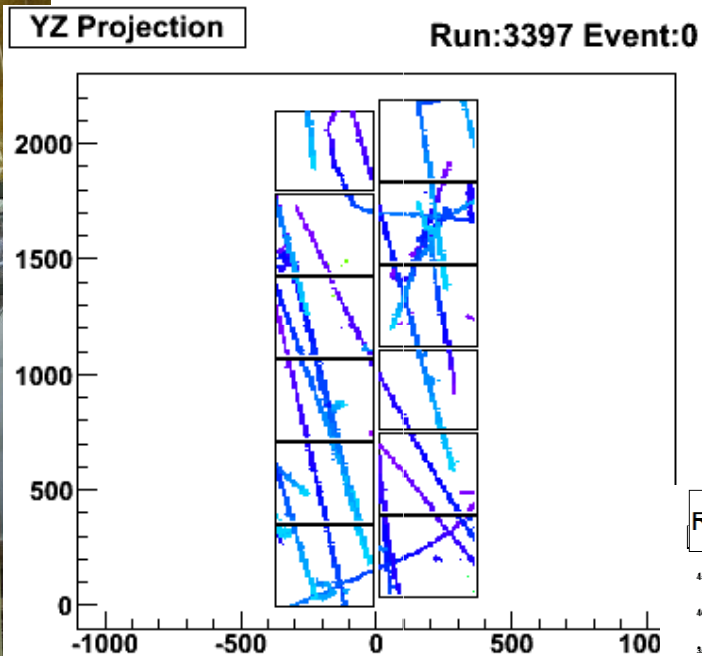
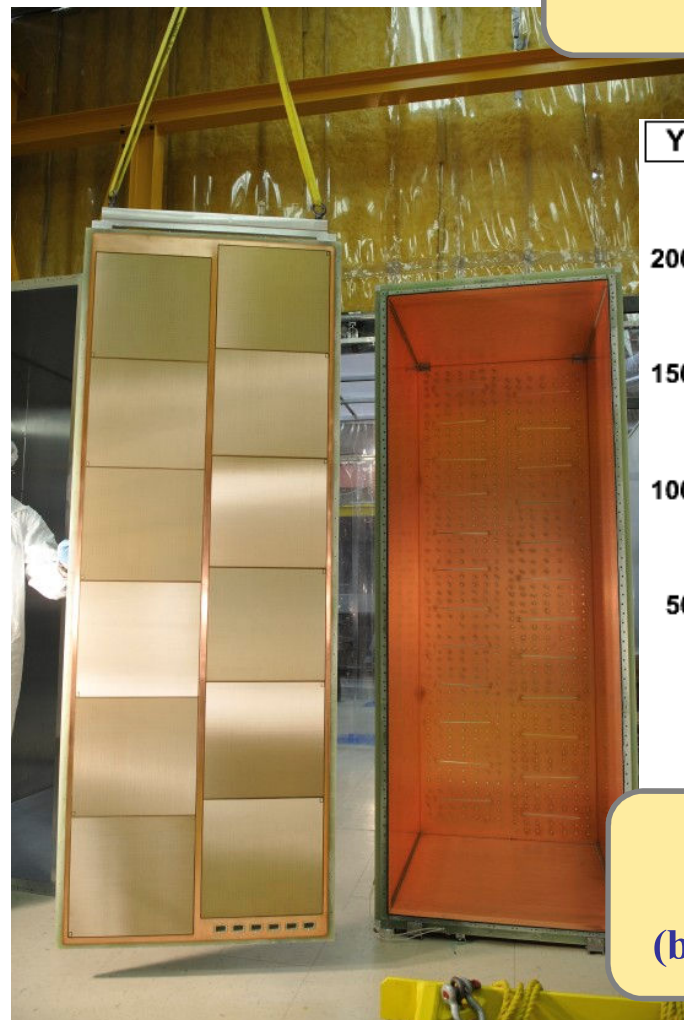
GEM+ Timepix

J. Kaminski

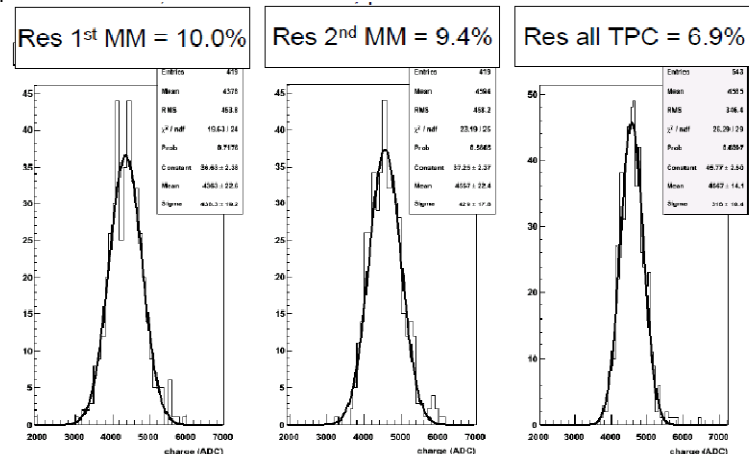
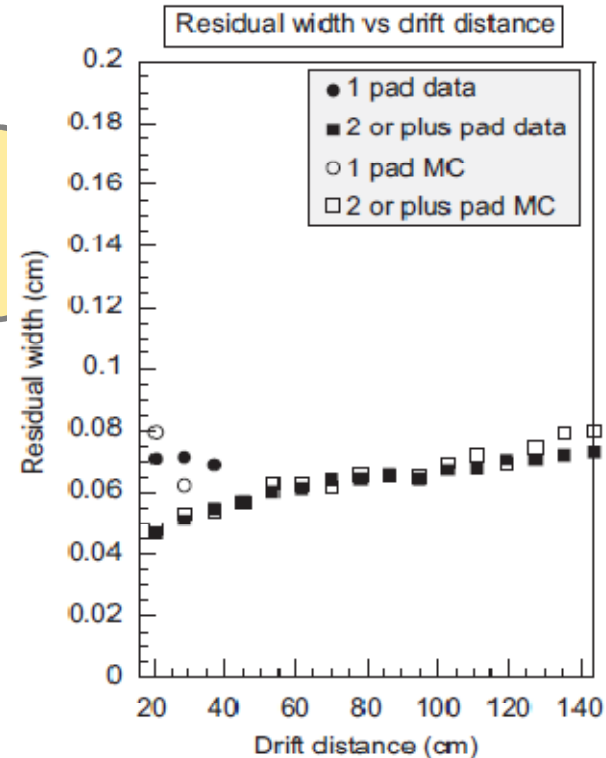


T2K TPC, J. Beucher

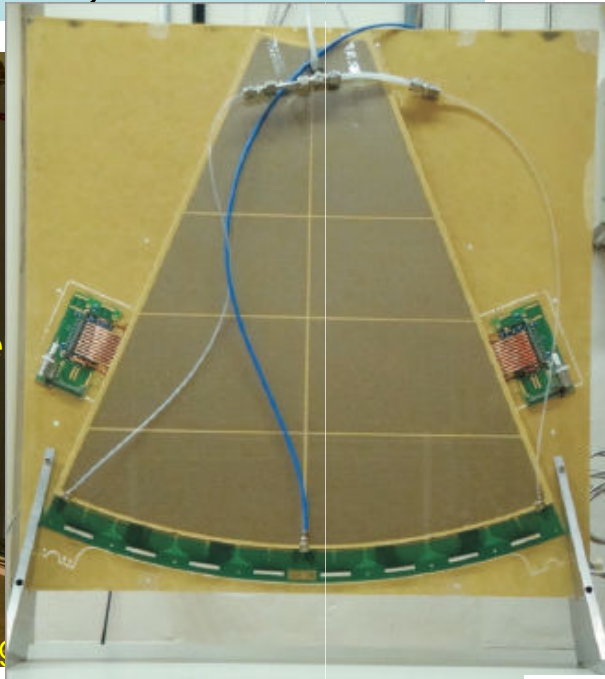
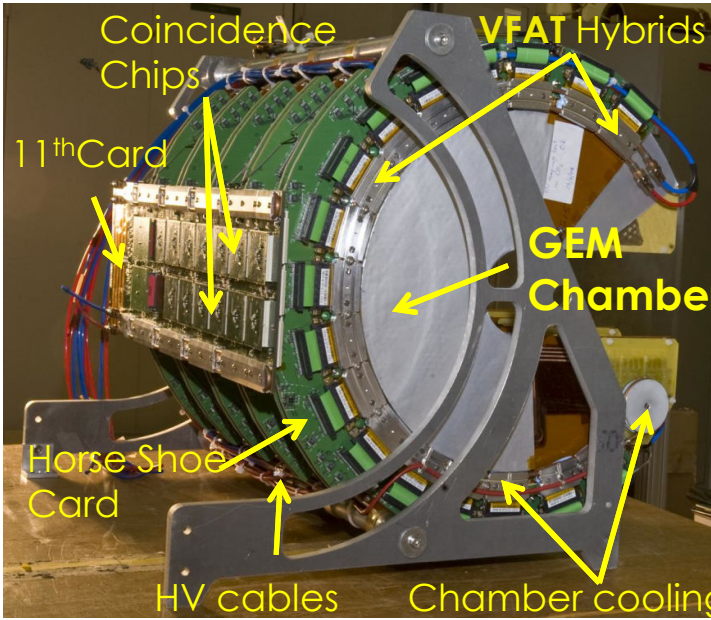
24 bulk-micromegas + FEE + mechanicals
 3 m² of bulk micromegas
 41472 FEE channels



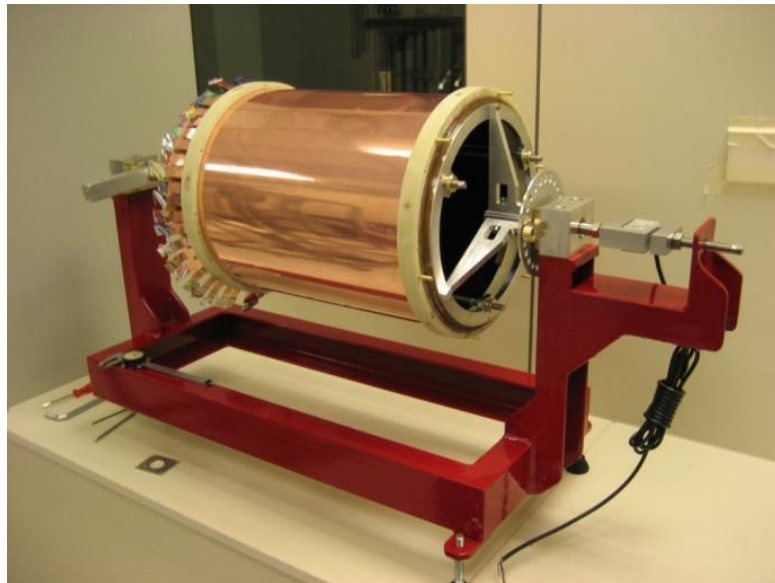
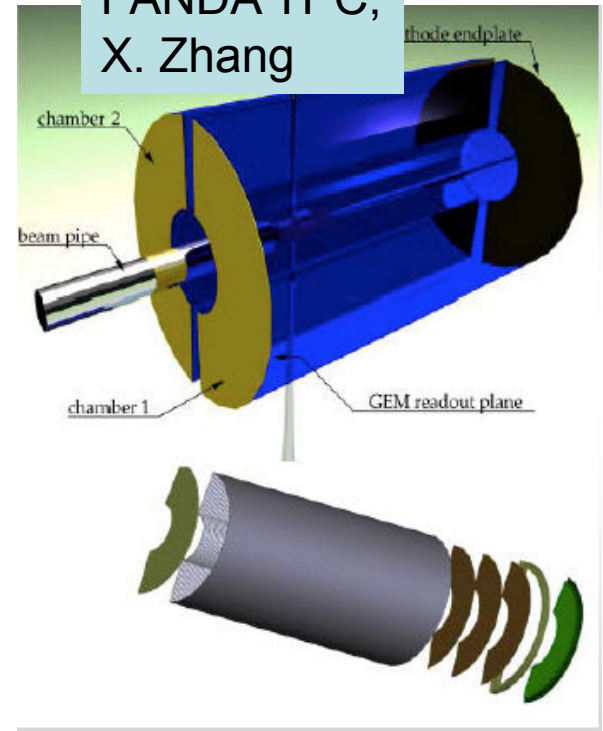
Reconstructed cosmits
 by a a readout plane
 (beam tests @ TRIUMF on-going)



TOTEM GEMs, T. Hilden, V. Greco...

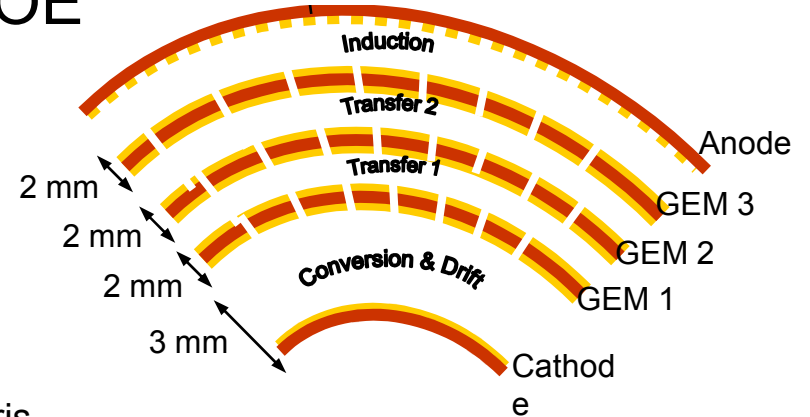


PANDA TPC, X. Zhang



Cylindrical Triple GEM

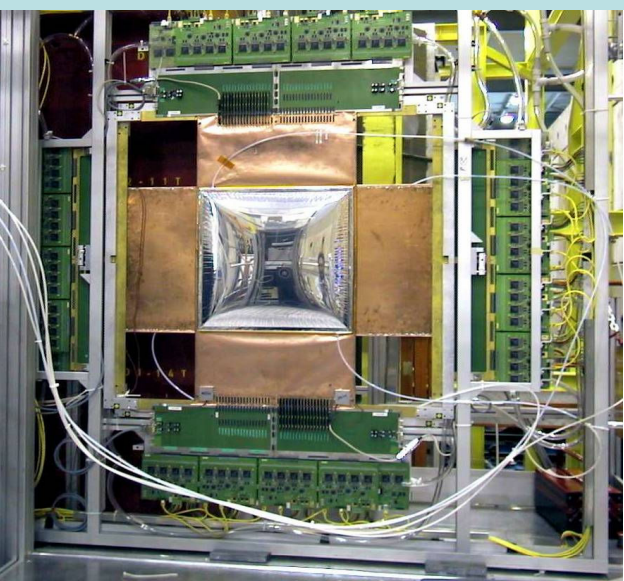
KLOE



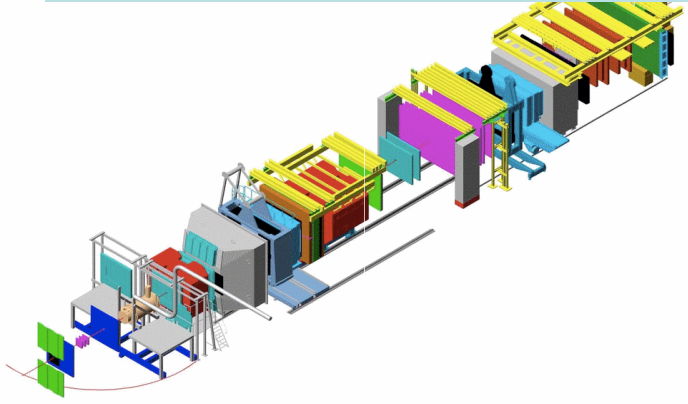
I. Giomataris

COMPASS Micromegas

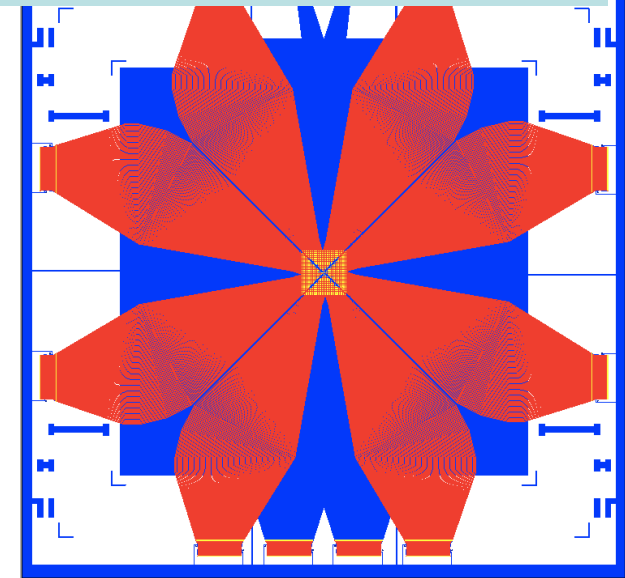
D. Neyret



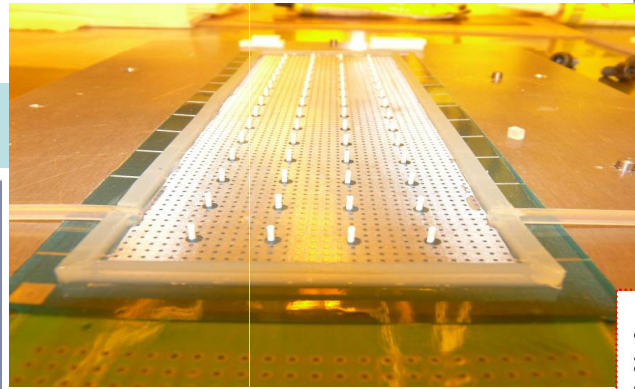
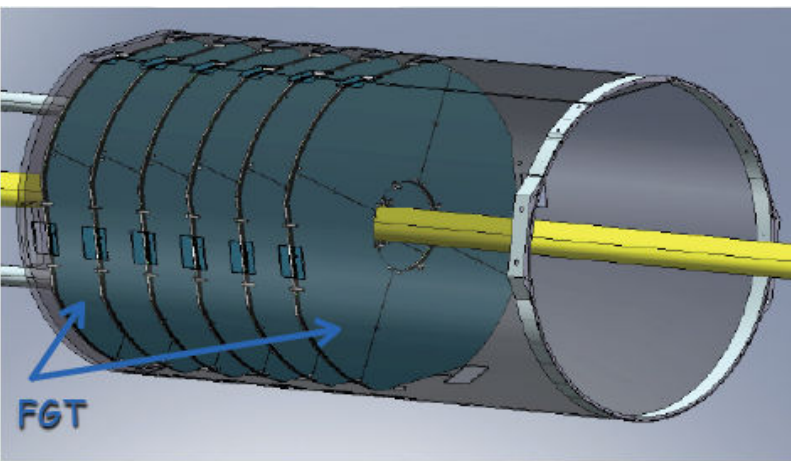
Micromegas and GEM



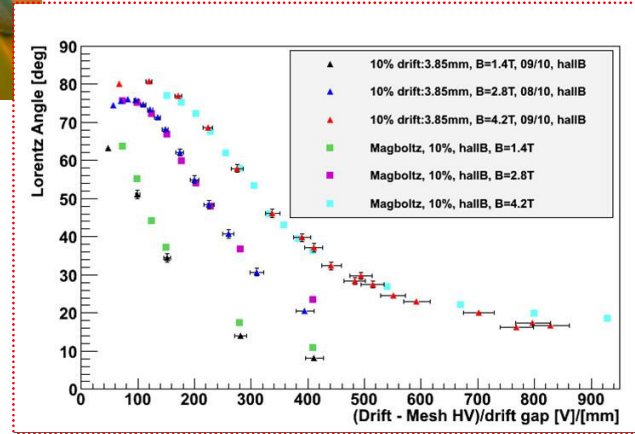
Pixelized Micromegas



B. Surov, STAR GEM



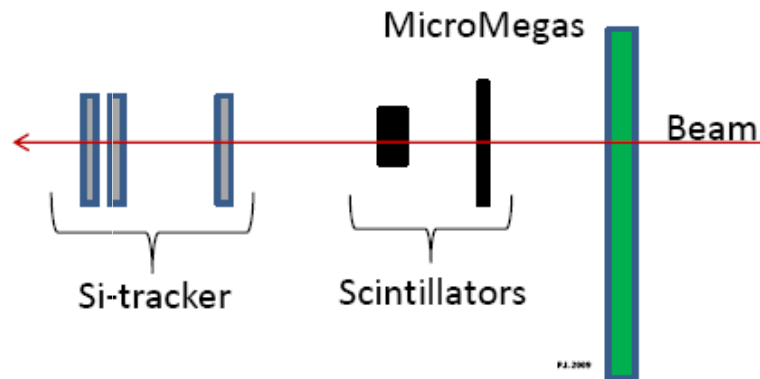
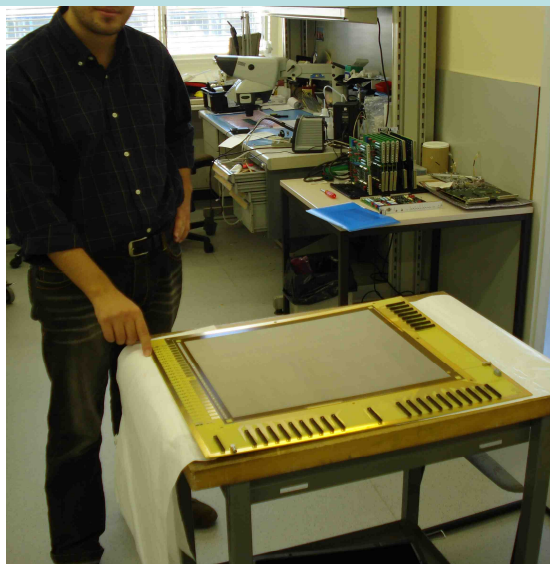
CLAS12 S. Procureur



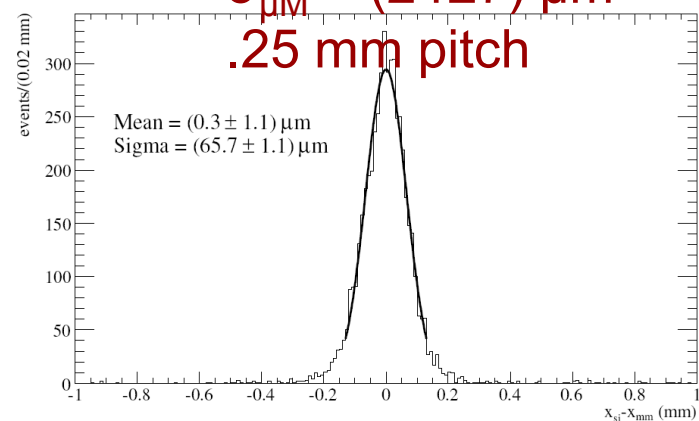
25/06/2009

I. Giomataris

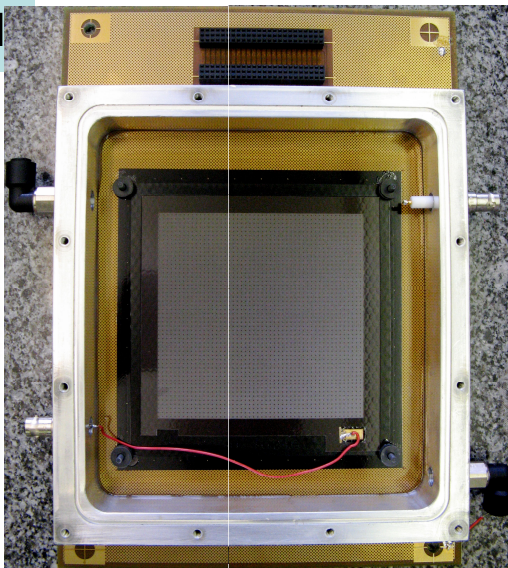
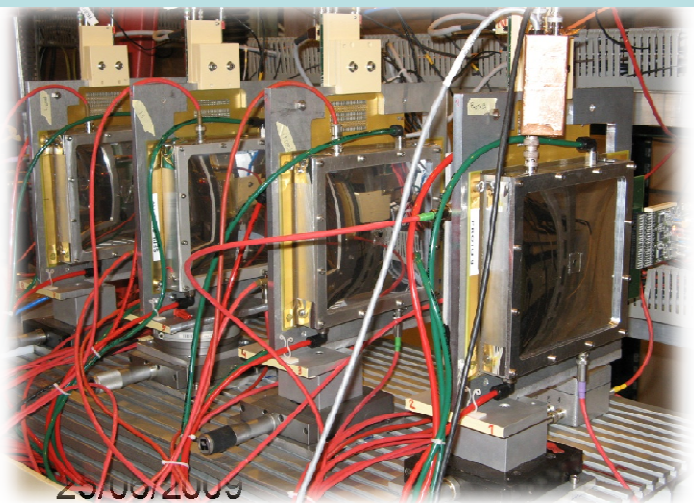
ATLAS sLHC Micromegas, K. Nikolopoulos



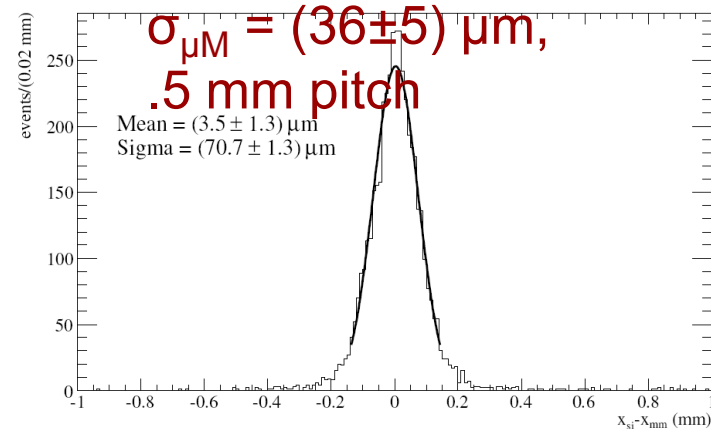
$\sigma_{\mu M} = (24 \pm 7) \mu m$
.25 mm pitch



Beam tests, F. Jeanneau



$\sigma_{\mu M} = (36 \pm 5) \mu m$,
.5 mm pitch

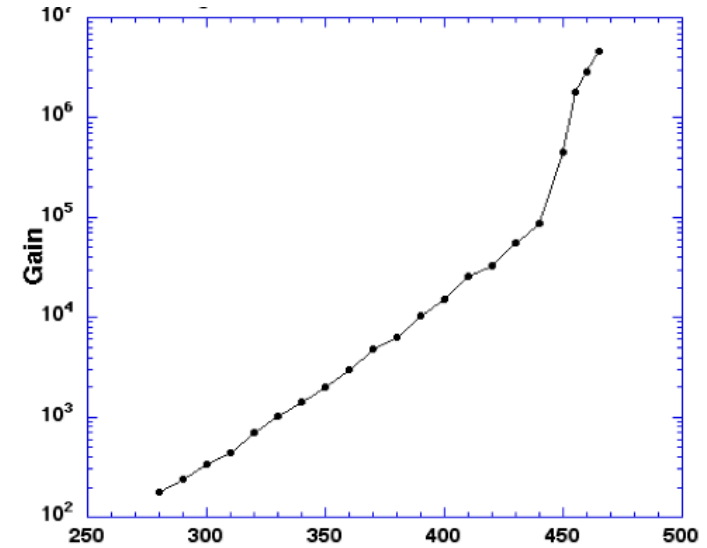
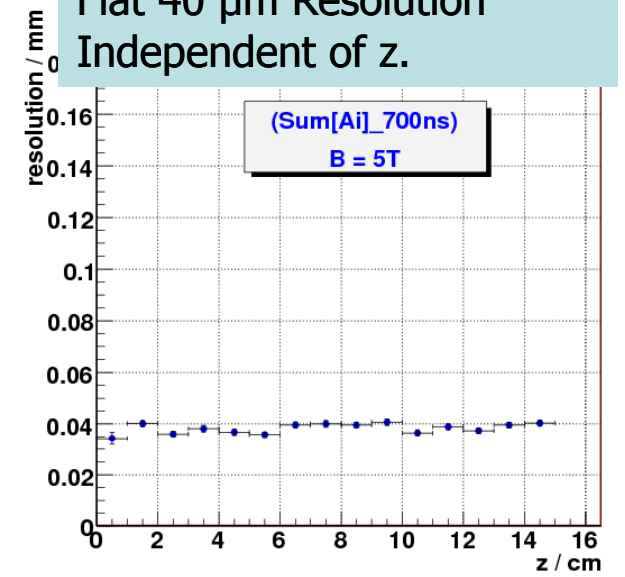
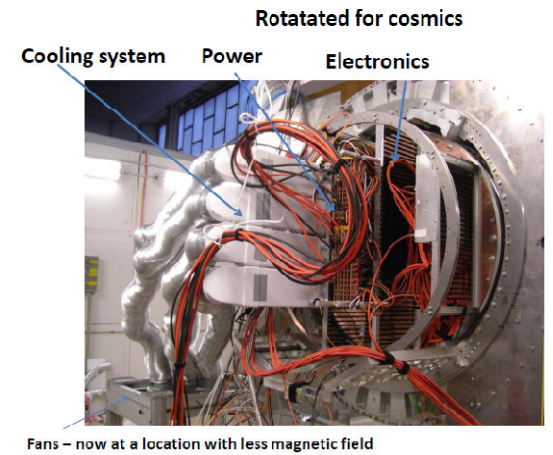
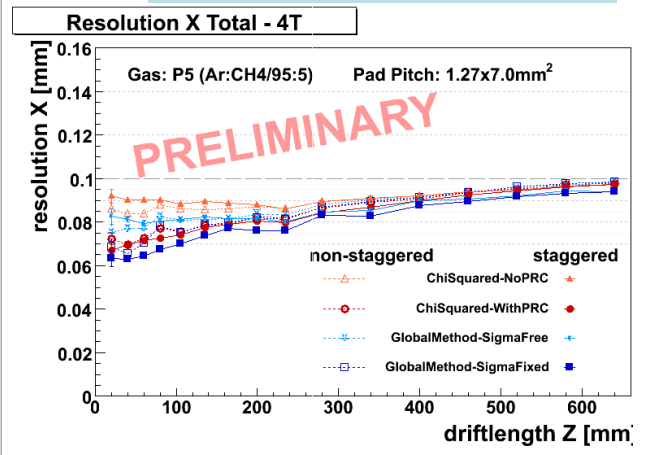
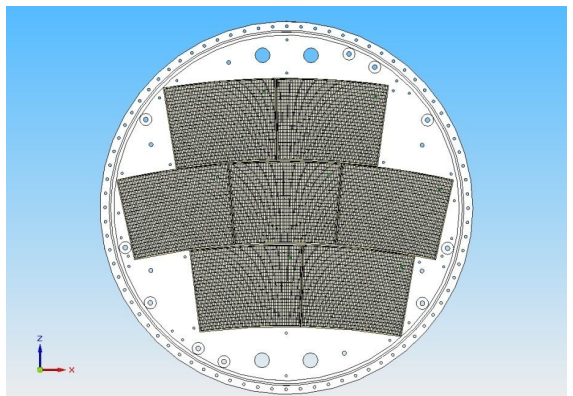
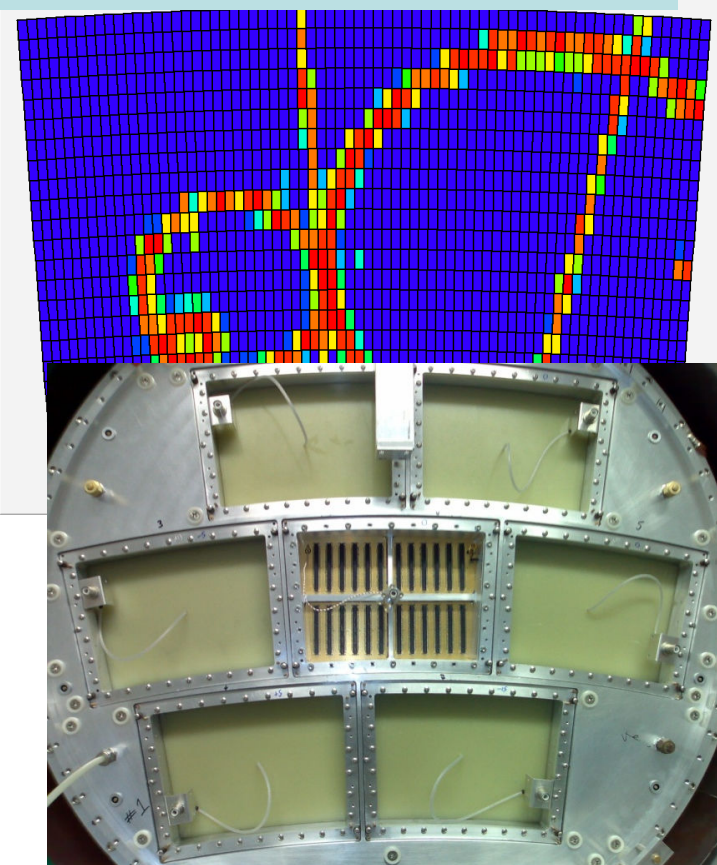


Micromegas ILC-TPC, D. Attie

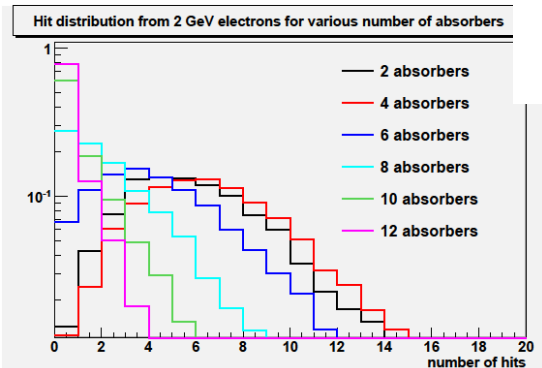
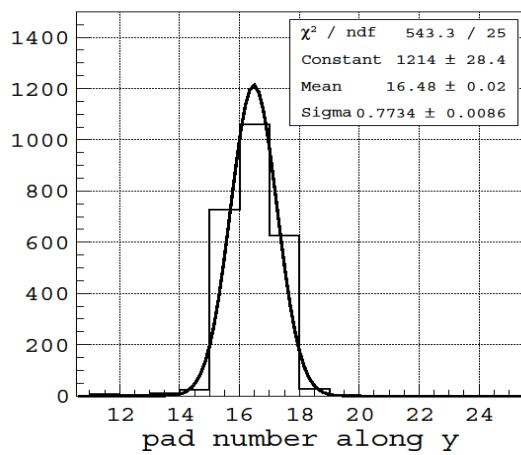
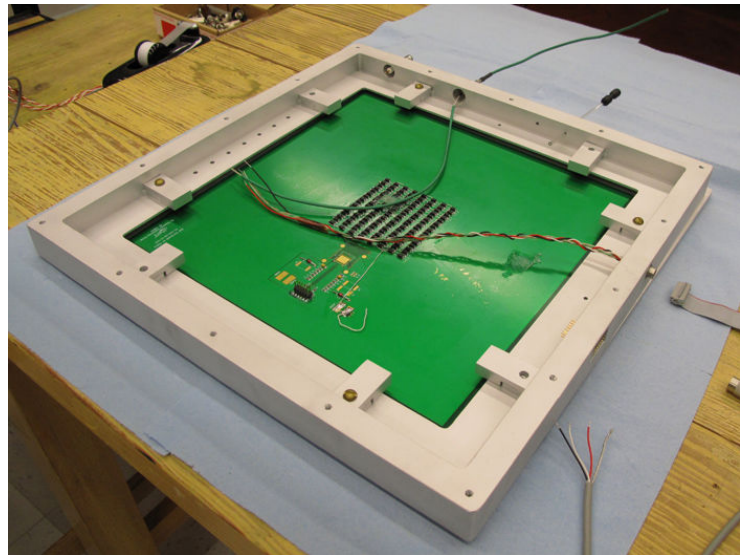
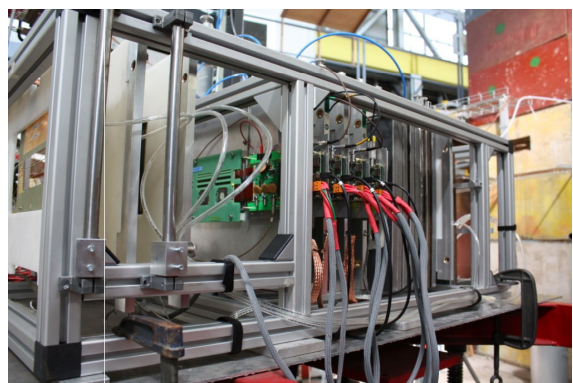
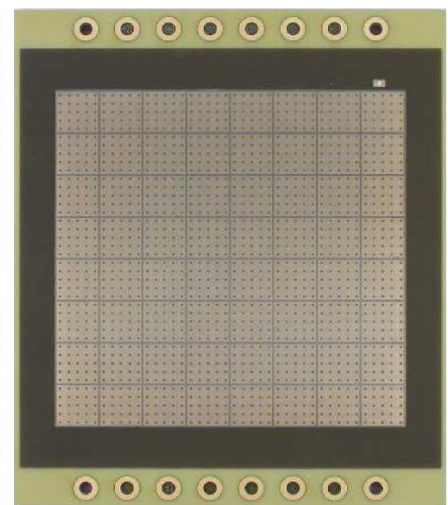
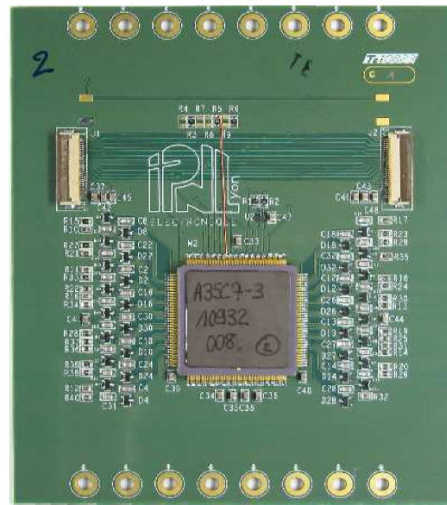
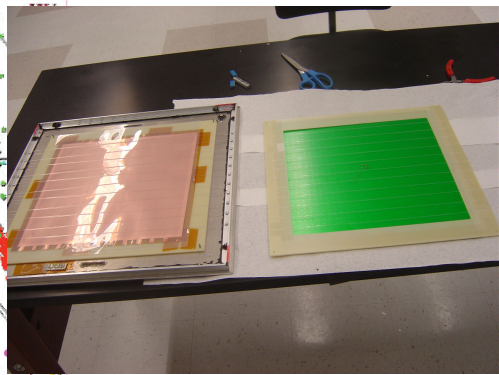
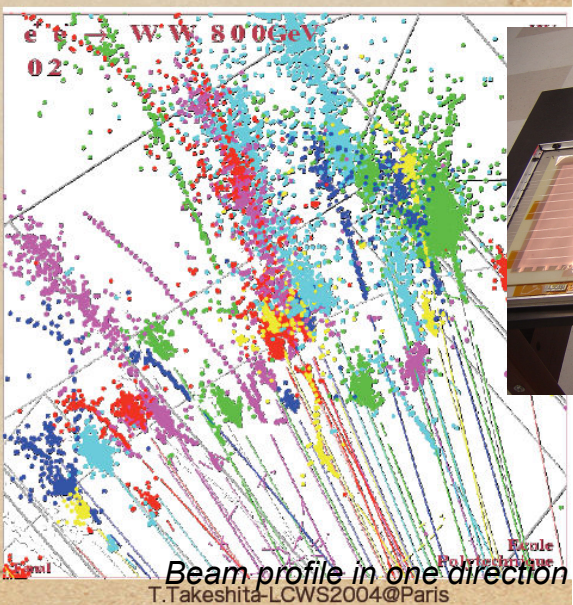
GEM ILC TPC, T. Matsuda

Resistive read-out, M. Dixit

New method 5663/17669
Flat 40 μm Resolution
Independent of z .

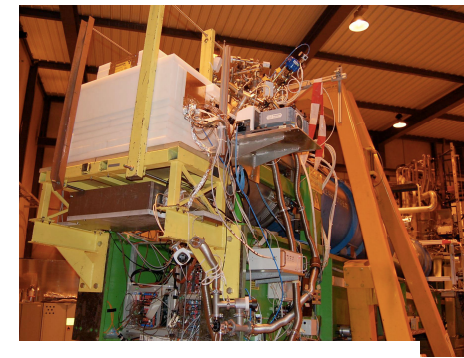
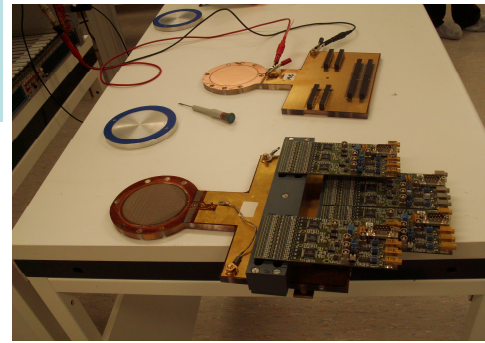
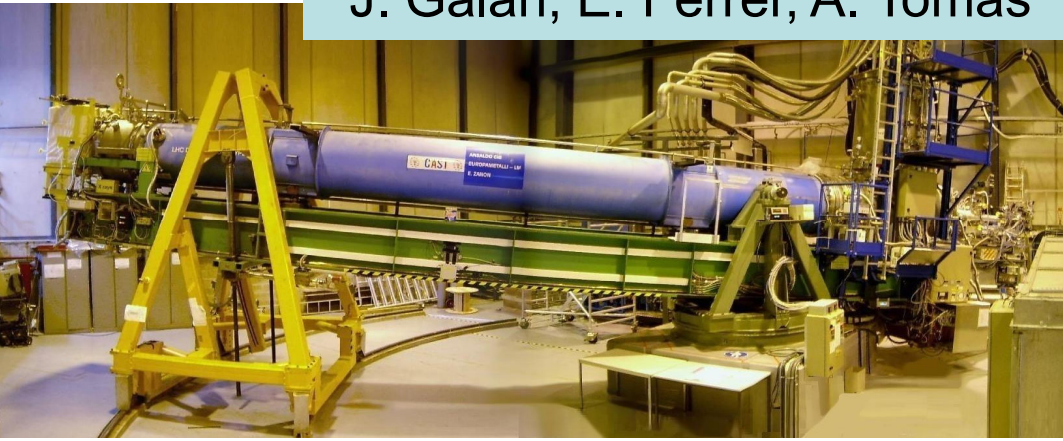


I. Giomataris

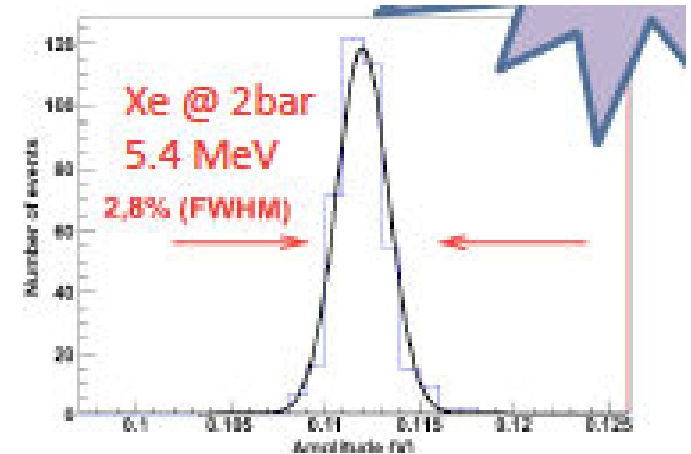
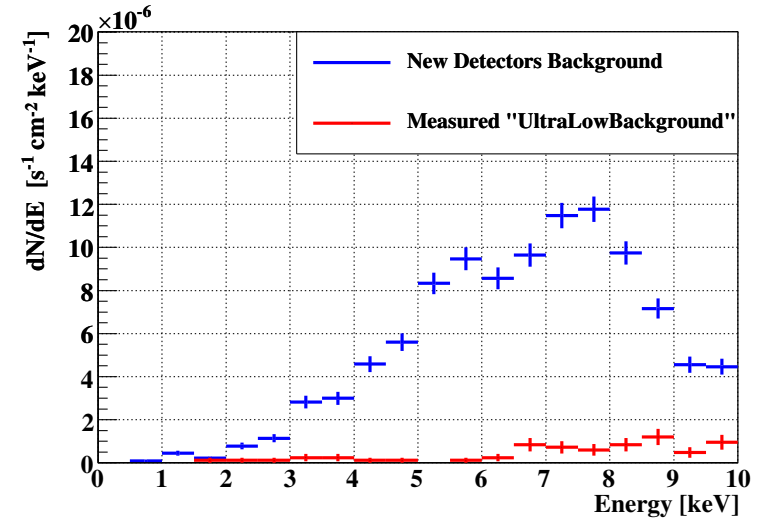
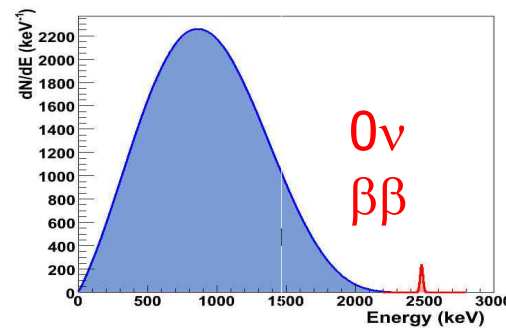
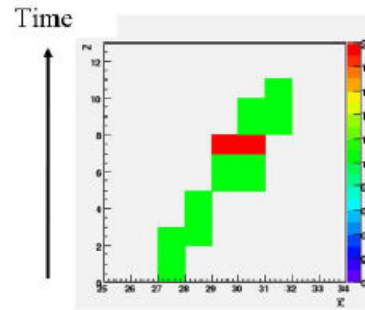
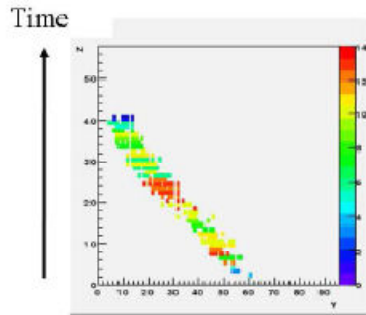
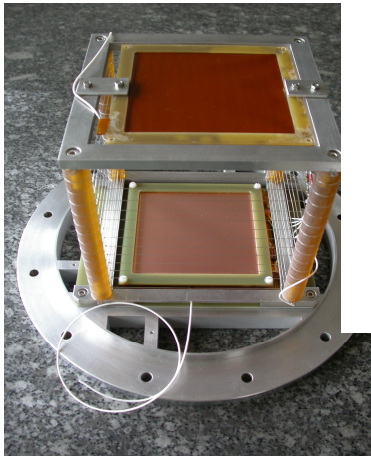


I. Gi

Low background Micromegas, J. Galan, E. Ferrer, A. Tomas



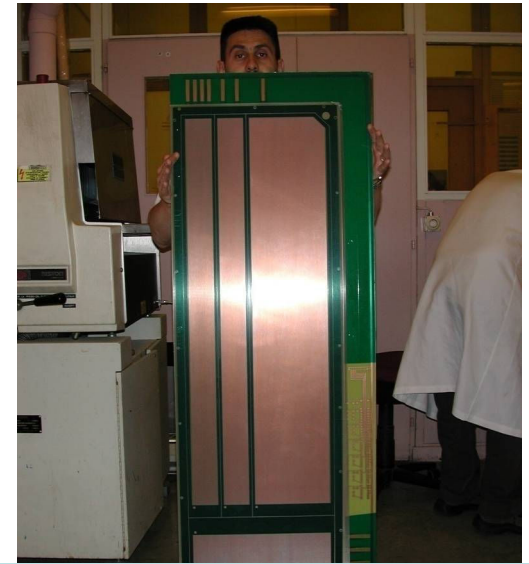
WIMP directional TPCs C. Grignon



25/06/2009

Large GEM and Micromegas R. De Oliveira

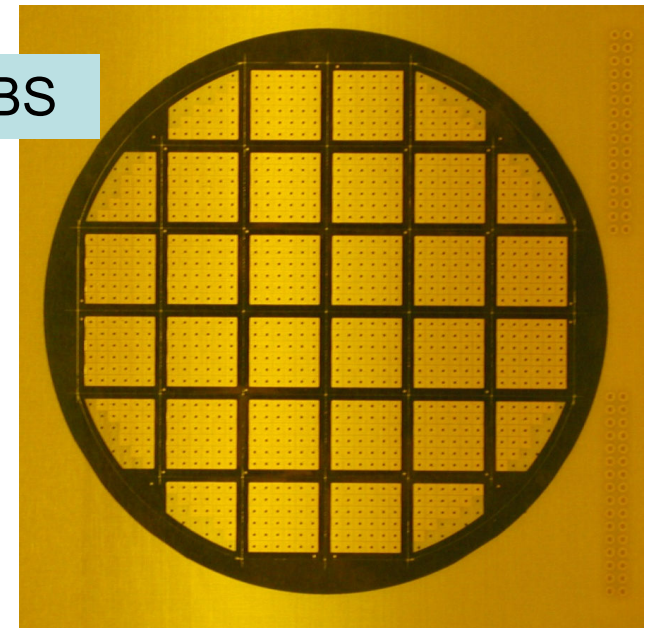
-99cm x 33cm active area



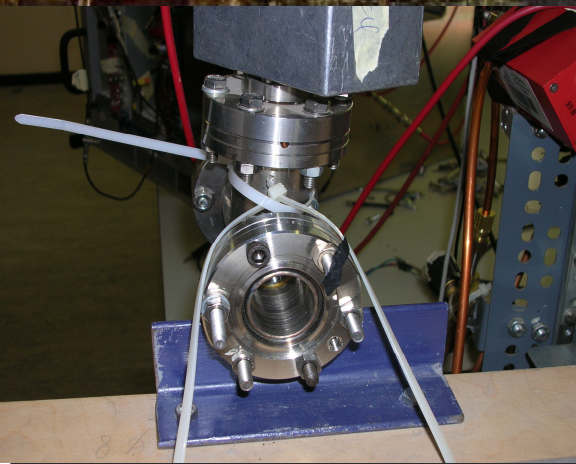
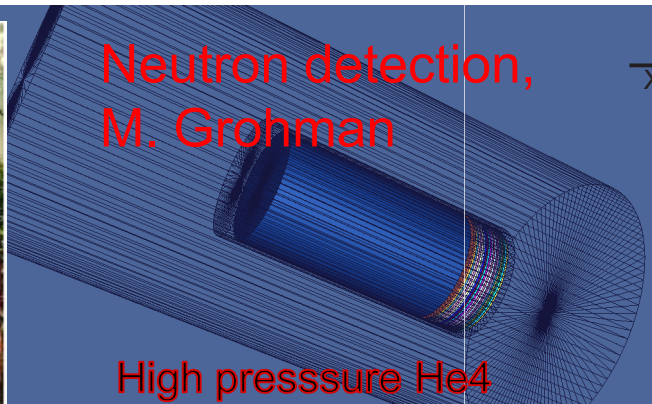
Detector ready !

Micromegas/TRIANGLE LABS

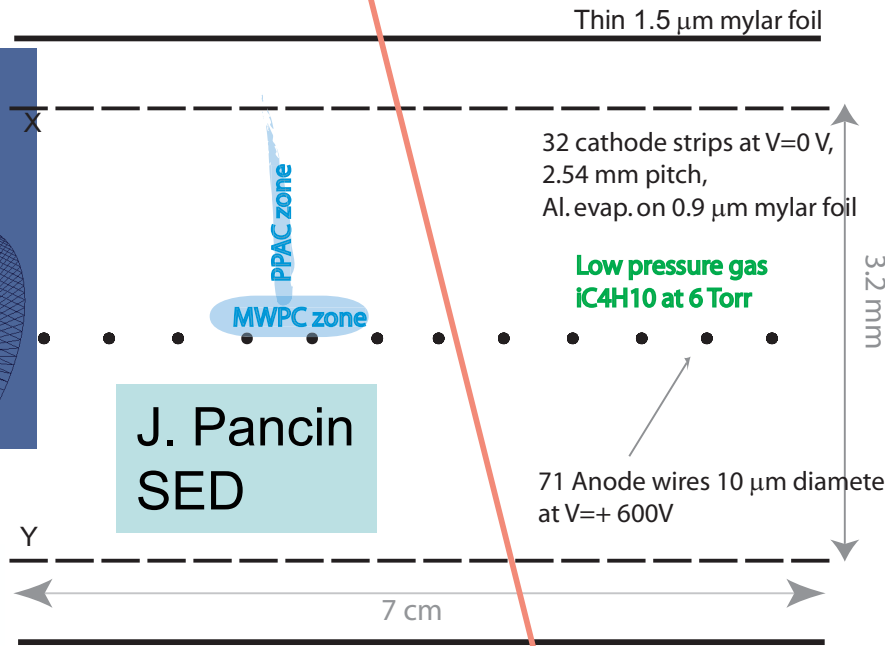
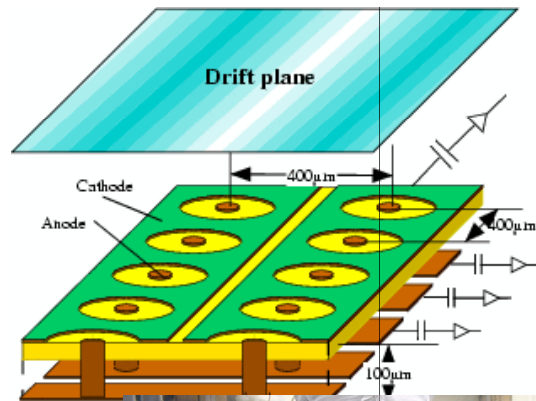
New FLEX Visit November 2008,
organized by Changwon university



V. Peskov, fire detectors

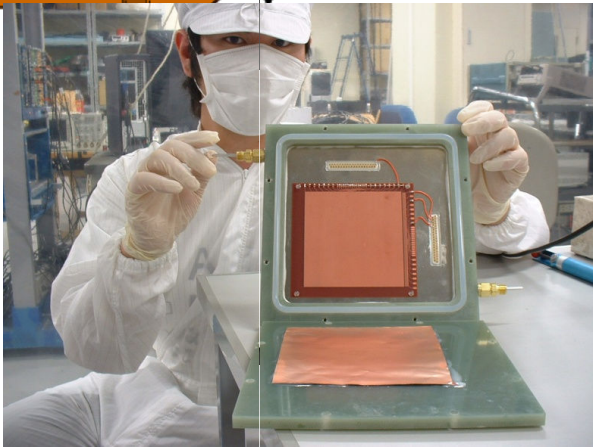
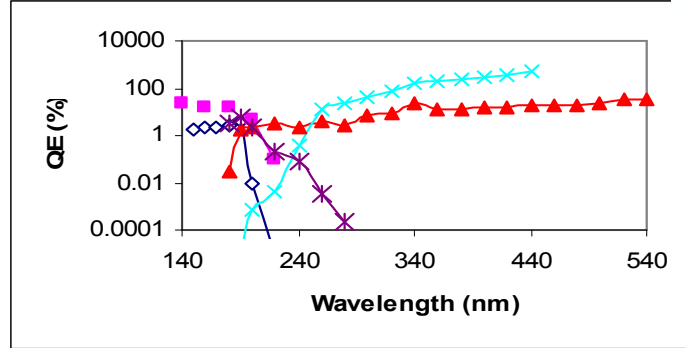
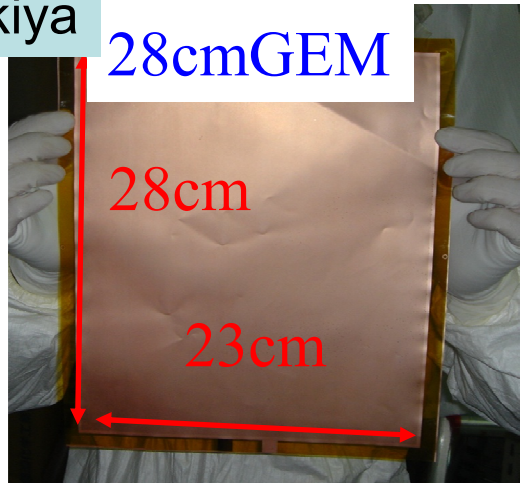


A. Ochi

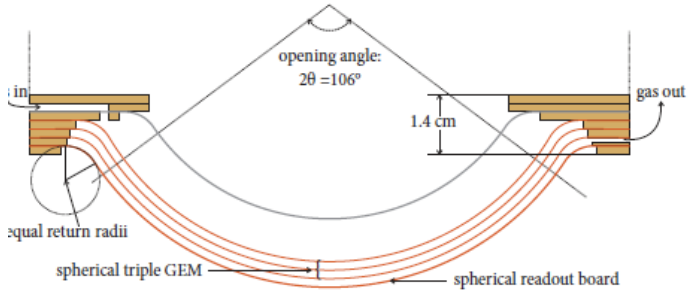


Gas PMT
H. Sekiya

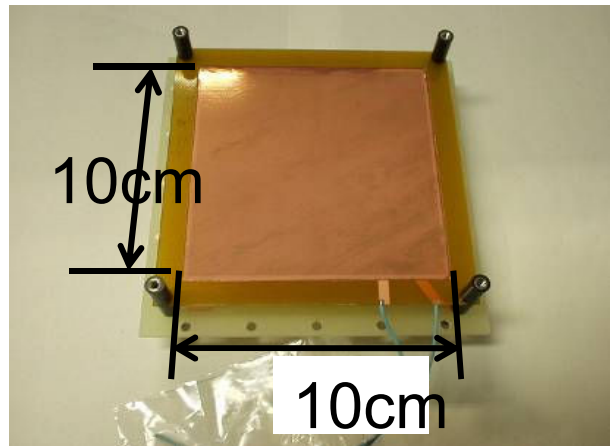
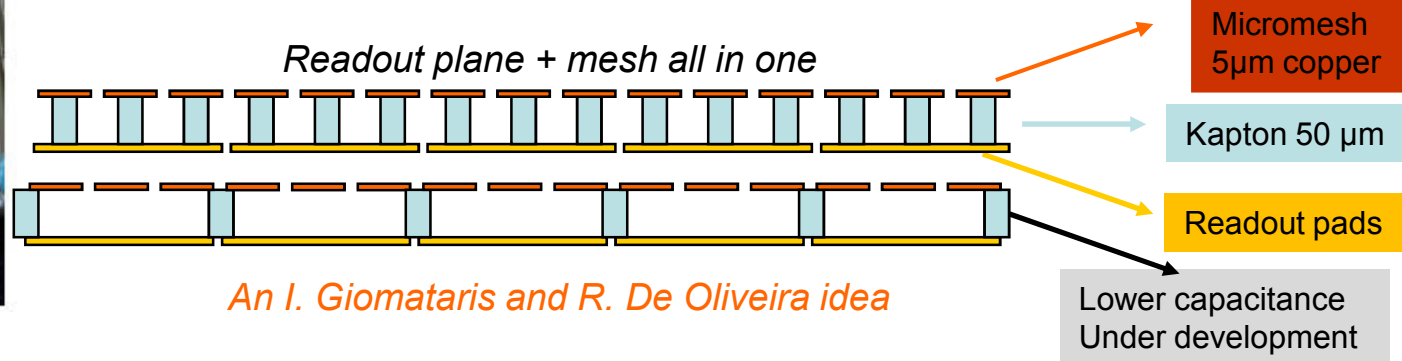
28cmGEM



Spherical GEM, S. D. Pinto

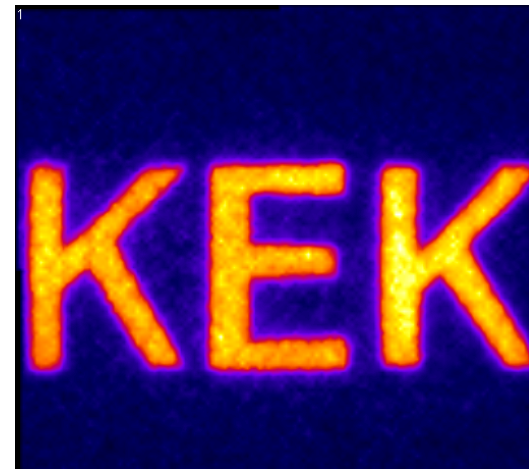


Micro-Bulk Micromegas Th. Papaevangelou

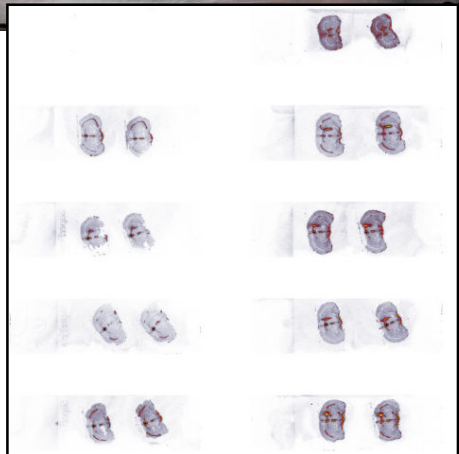
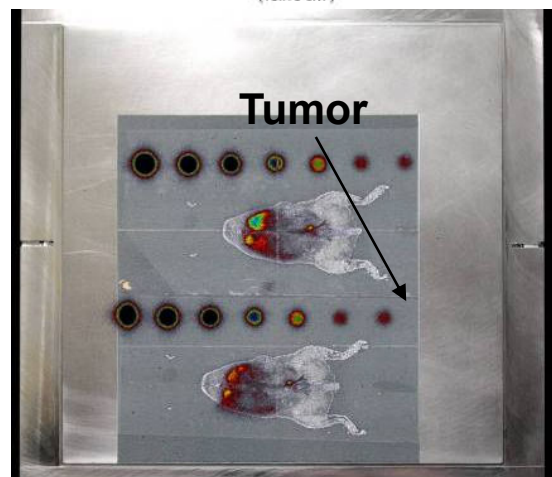
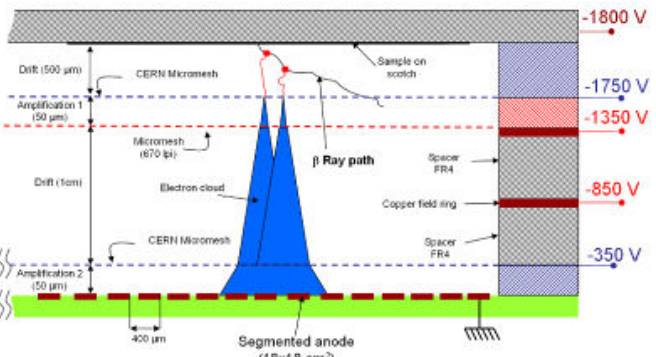


Japanese GEMs S. Uno

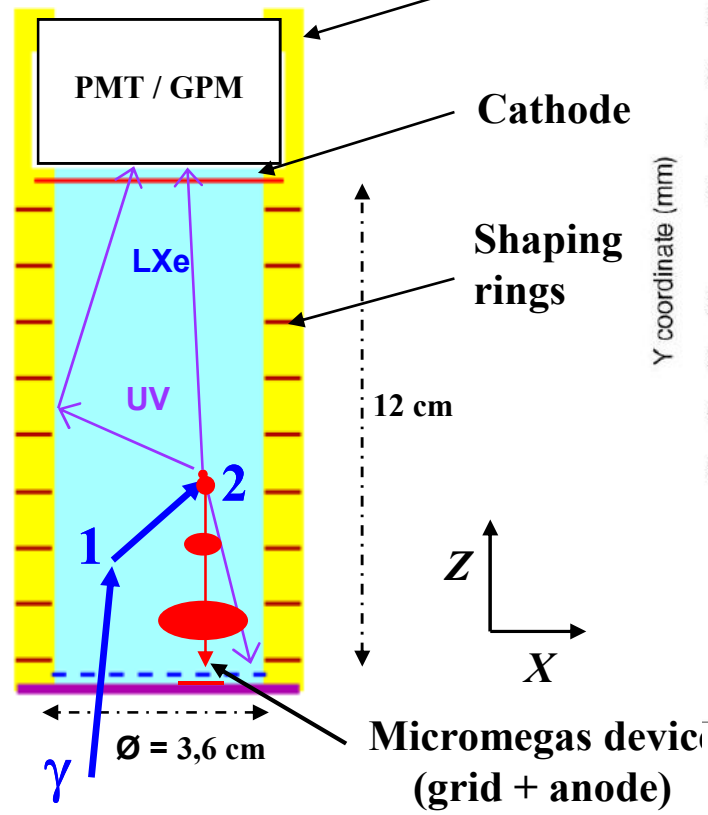
I. Giomataris



Beta imager J. Donnard

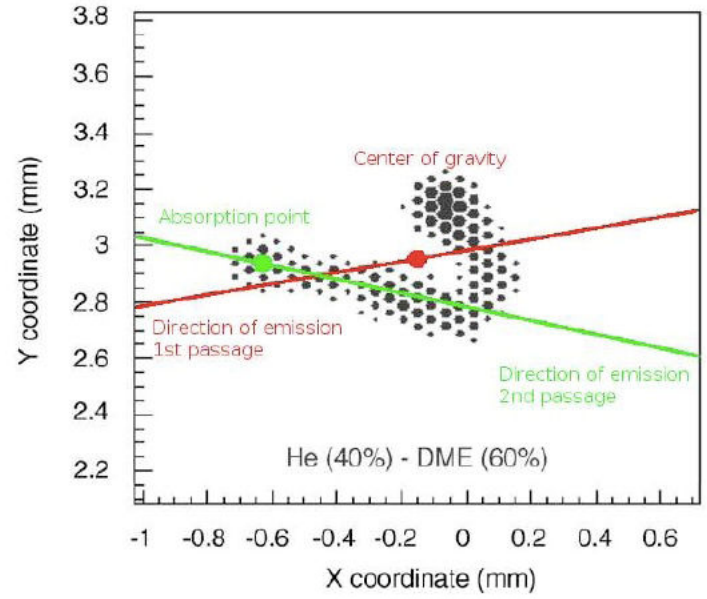


Liquid Xe S. Duval

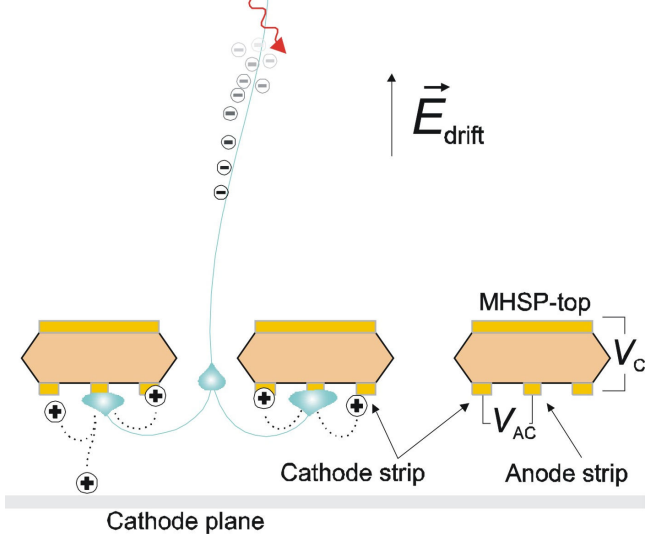


I. Giomataris

X-ray polarimetry F. Muleri

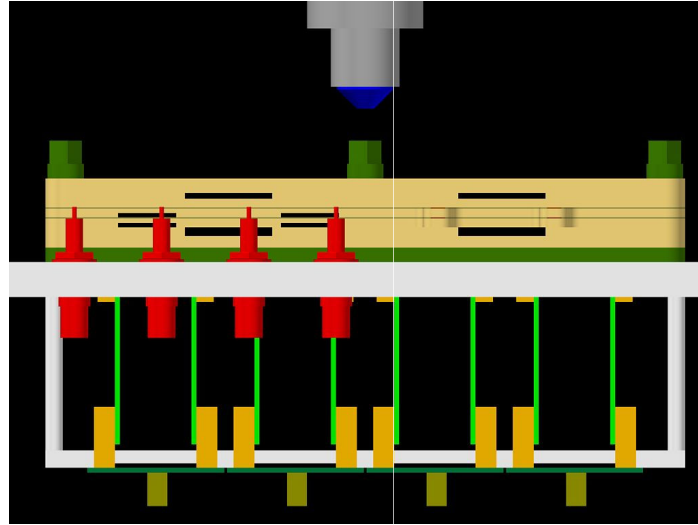


X-ray L. Carita



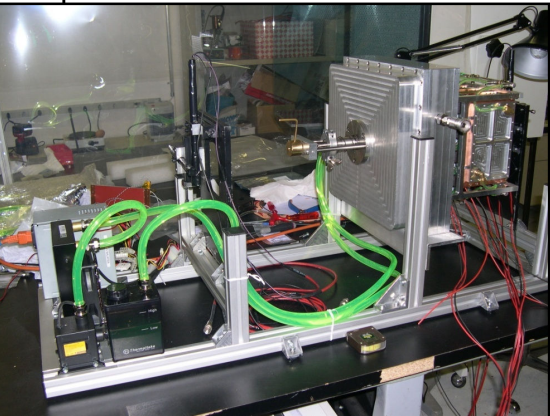
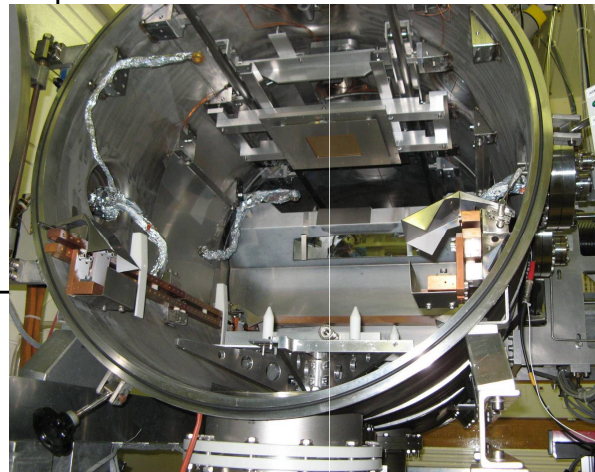
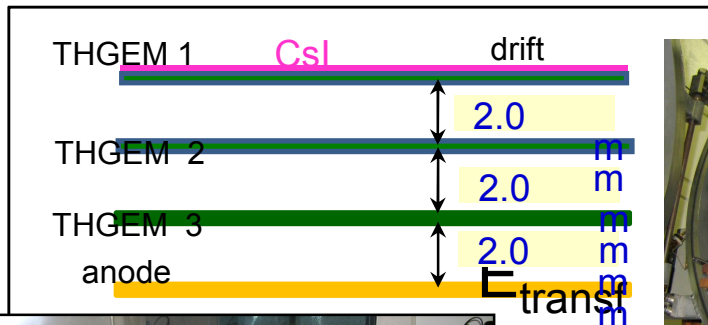
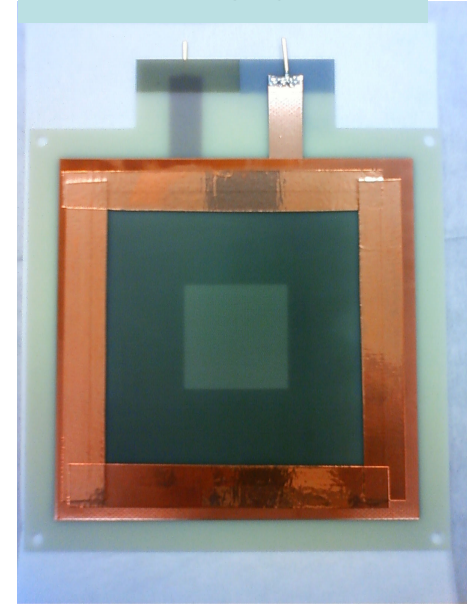
Thick GEM

F. Tessaroto

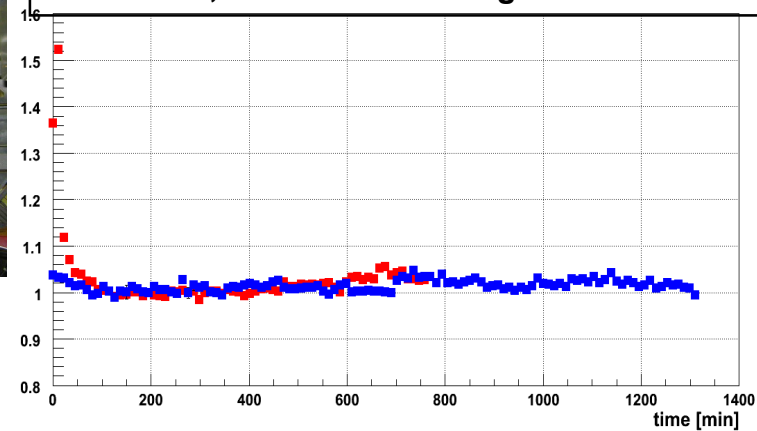


RET-thick GEM

R. Akimoto



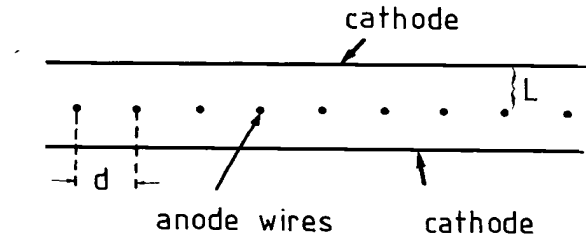
- Gain **increase** → stability **gets worsen**.
- **At first few hours**, gain drops down.
- After that, the fluctuation of gain is within **±4%**



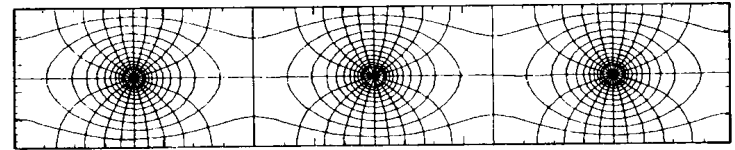
Future

- Larger detectors – Industrial process
- Robust detectors
- Higher gains
- Lower spark rates
- Better performances
- Industrial applications
- **New concepts**

MPWC

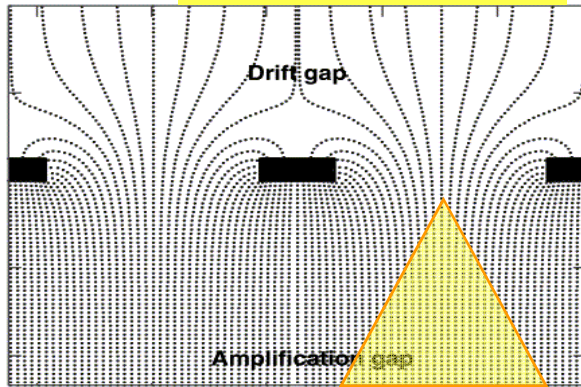


$E=1/r$
 $C \approx L > 10 \text{ pF}$



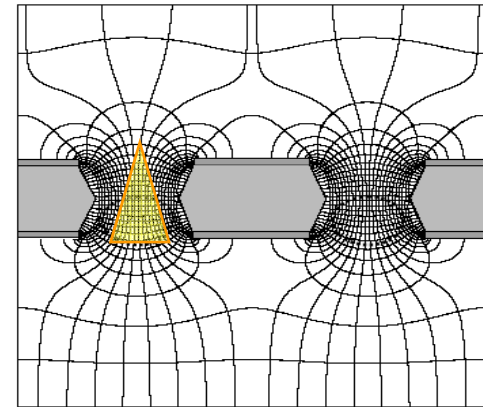
Parallel Plate Detector

Micromegas

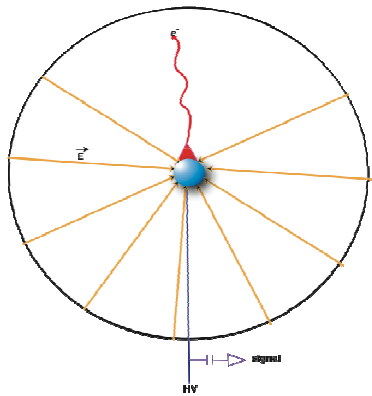


$E= \text{constant}$
 $C \approx S > 1 \text{ nF}$

GEM

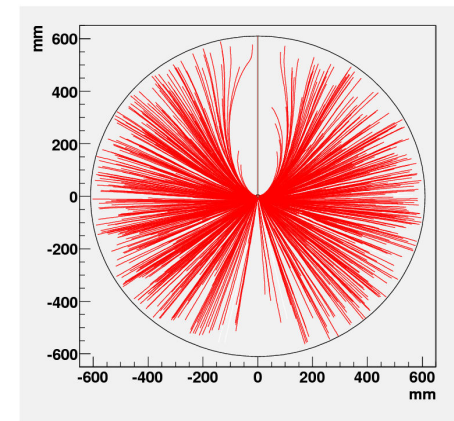


Spherical Proportional Counter



$E=1/r^2$
 $C \approx R_{in} < .1 \text{ pF}$

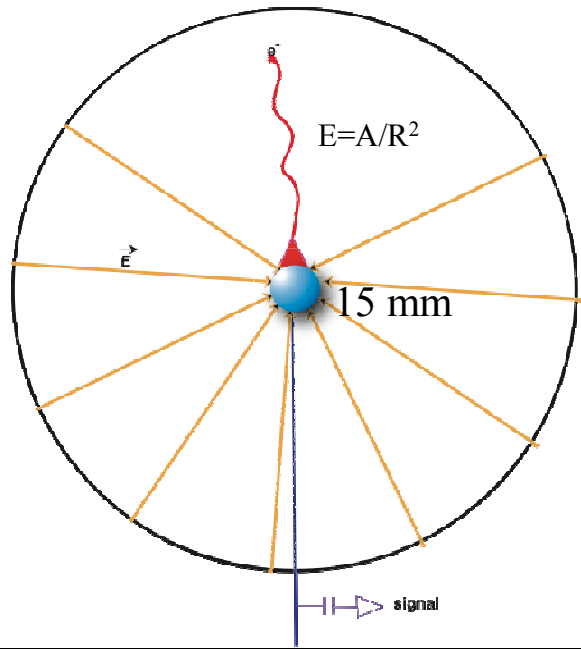
I. Giomataris



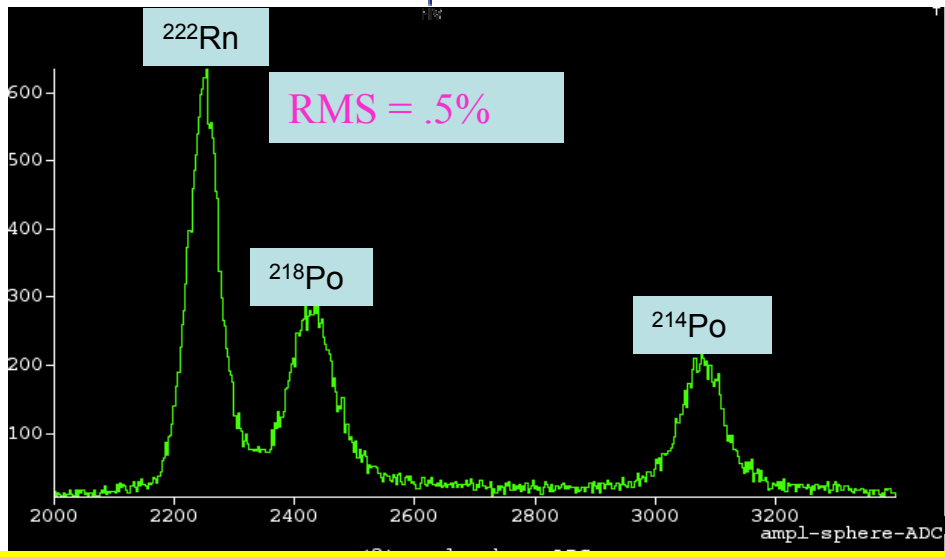
First prototype:

New Spherical DC concept

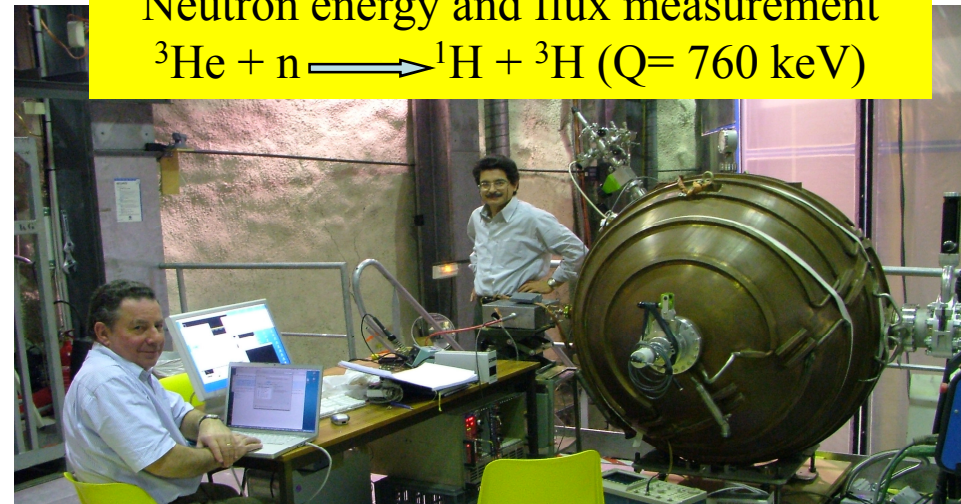
to get large detector out of a LEP cavity?"



Neutron energy and flux measurement
 ${}^3\text{He} + n \longrightarrow {}^1\text{H} + {}^3\text{H} \text{ (} Q= 760 \text{ keV)}$



Energy resolution under amplification: a world record !!

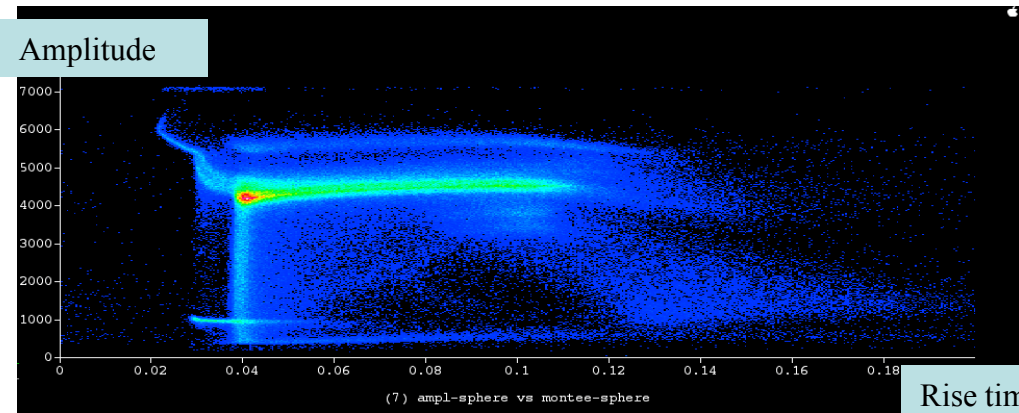
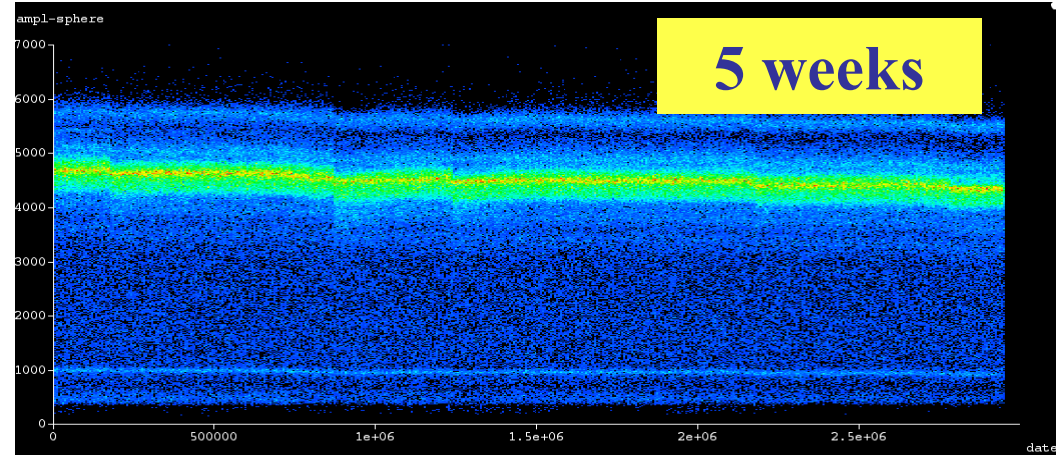


Goal: measure thermal neutron background
and estimate fast neutron flux

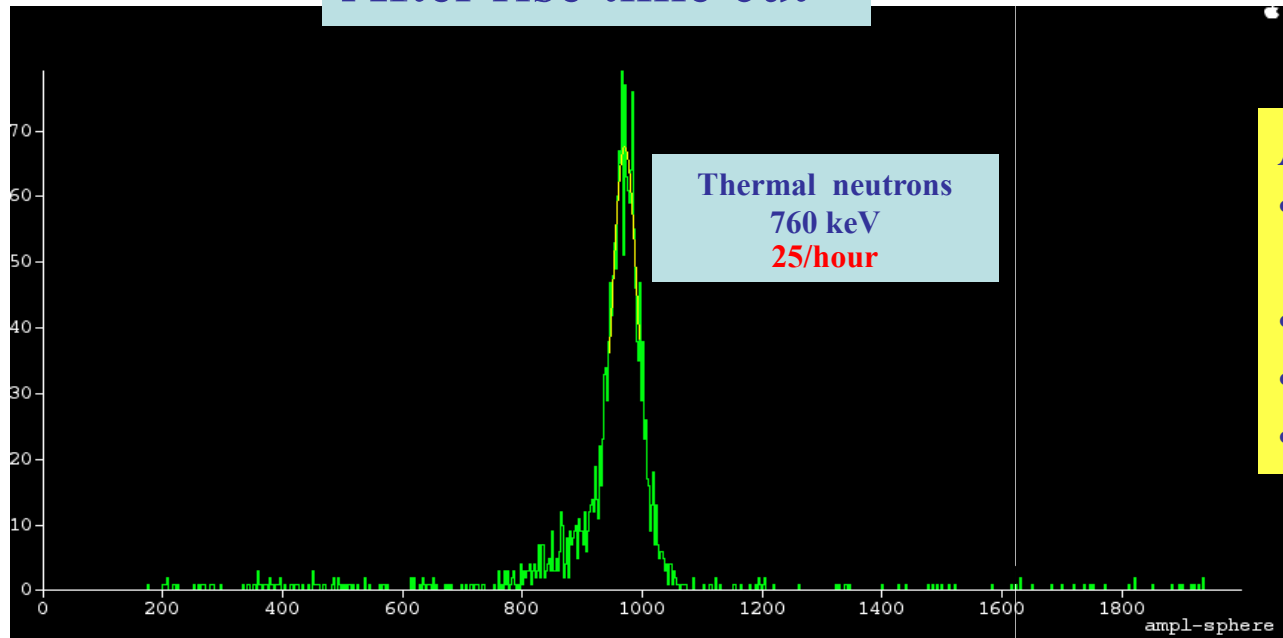
Results in LSM (preliminary)

Thermal neutron flux
 $3 \times 10^{-6} / \text{cm}^2 / \text{s}$

Detector is stable operating in seal mode



After rise time cut



Applications:

- Fast neutron measurement at underground lab
- Neutron seasonal variations
- Correlations with sun spot activity
- Cheap SuperNova detector

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