

# *Sideward Wall Detector for the ASY-EOS Experiment*

- B.Czech, J. Łukasik, P. Pawłowski, I. Skwirczyńska
  - (IFJ-PAN, Cracow)
- P. Bańka, J. Brzychczyk
  - (IF UJ, Cracow)



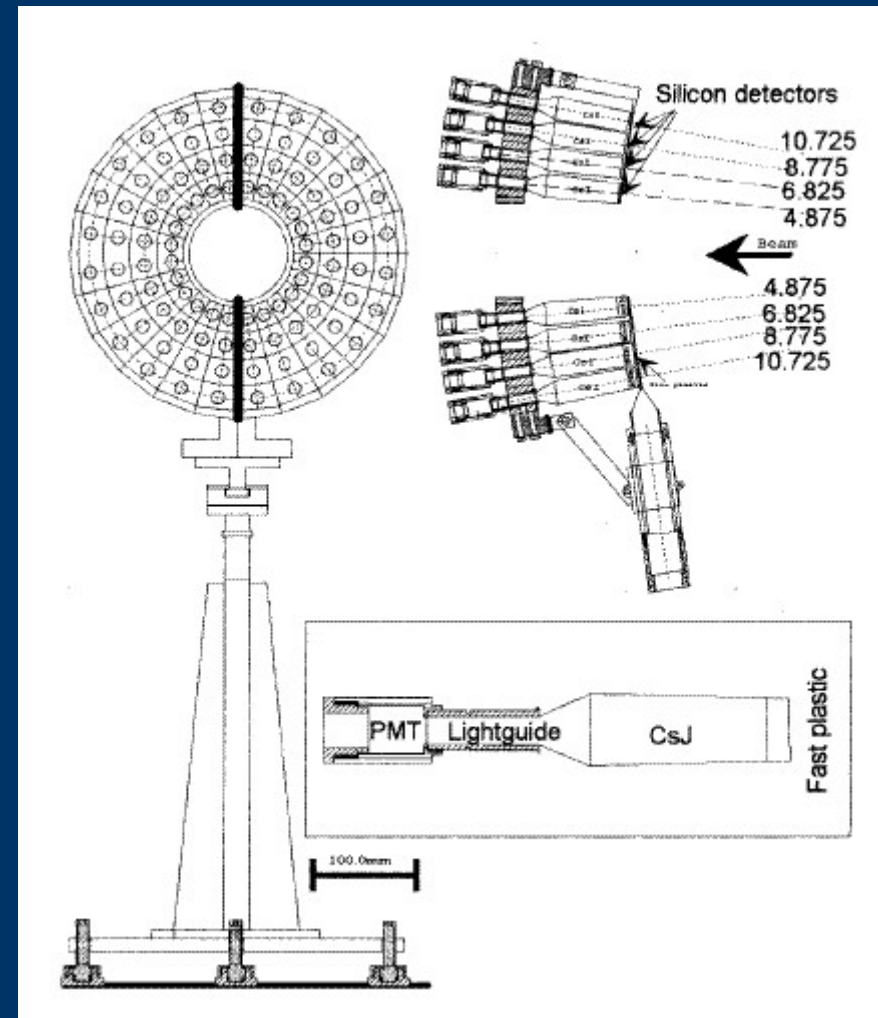
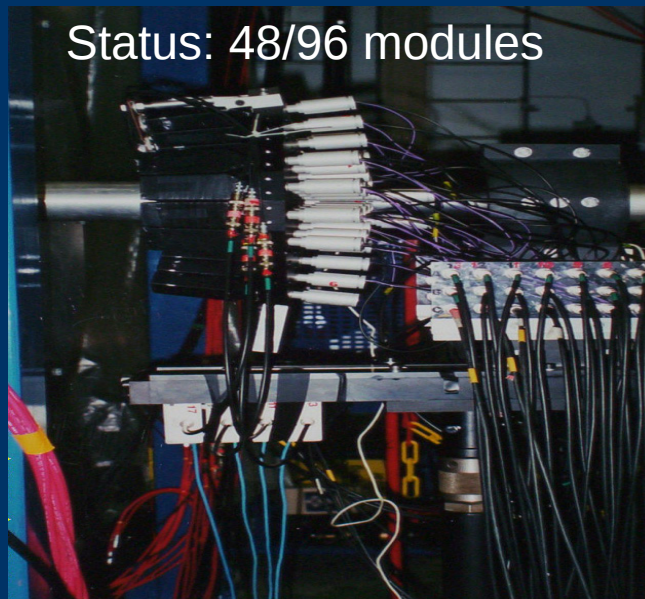
# Forward Wall Detector for the CHICSi project

A.Budzanowski, B.Czech, A.Siwiek, I.Skwirczyńska  
IFJ-PAN - Kraków, CHIC - Lund, TSL-Uppsala, KRI - St.Petersburg

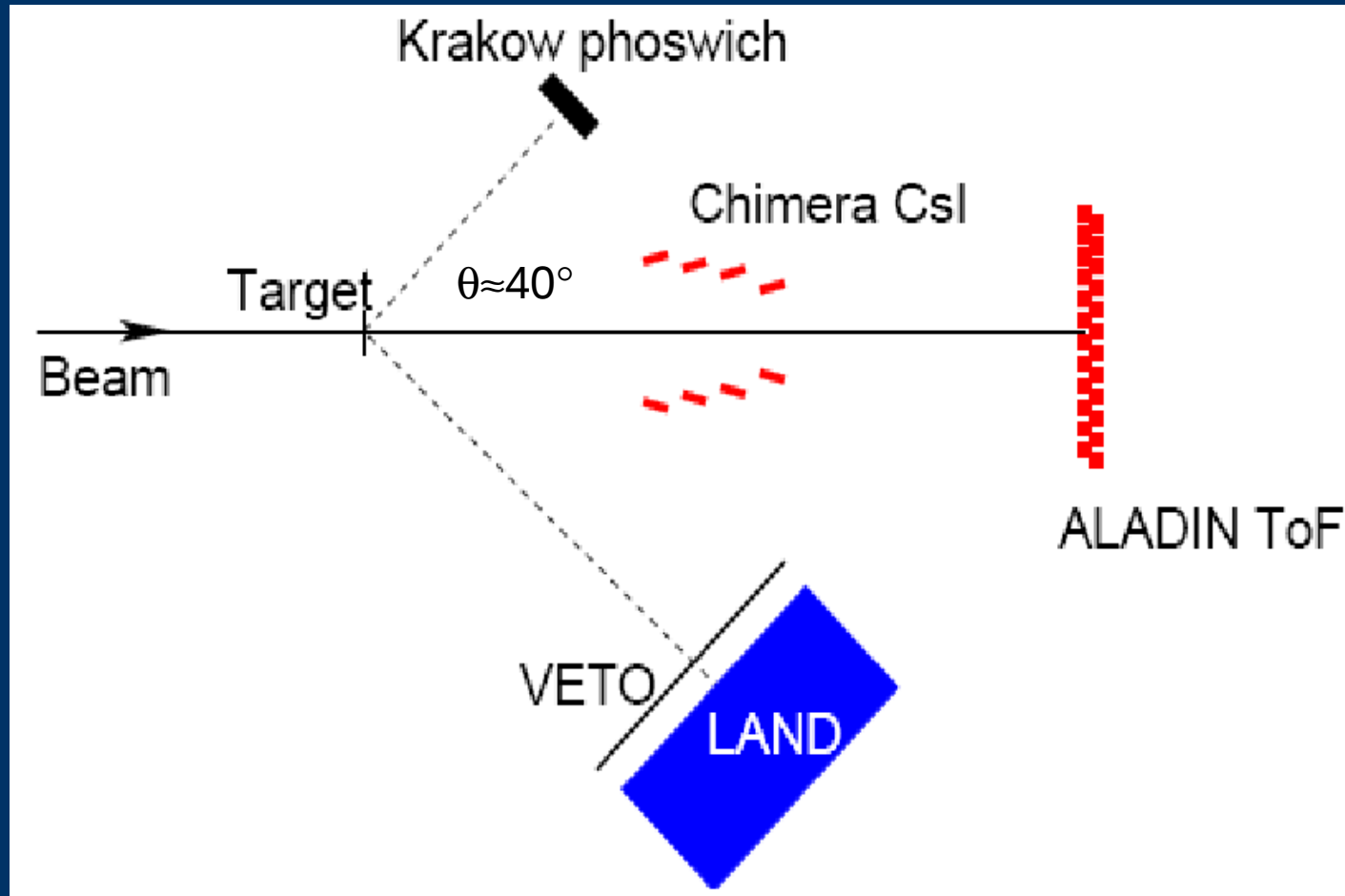
4 rings, 24 detectors/ring  
phoswich - 10 mm fast plastic + 80mm CsI(Tl)  
telescope - 750  $\mu\text{m}$  Si + 80 mm CsI(Tl)  
angles :  $\theta = 3.9^\circ - 11.7^\circ$ ;  
 $\varphi = 0^\circ - 360^\circ$   
Charge identification up to  $Z=18$

## Energy range:

$Z=1,2$  18-180 A MeV;  
 $^{12}\text{C}$  30-350 A MeV;  
 $^{20}\text{Ne}$  40-490 A MeV;  
 $^{40}\text{Ar}$  50-670 A MeV

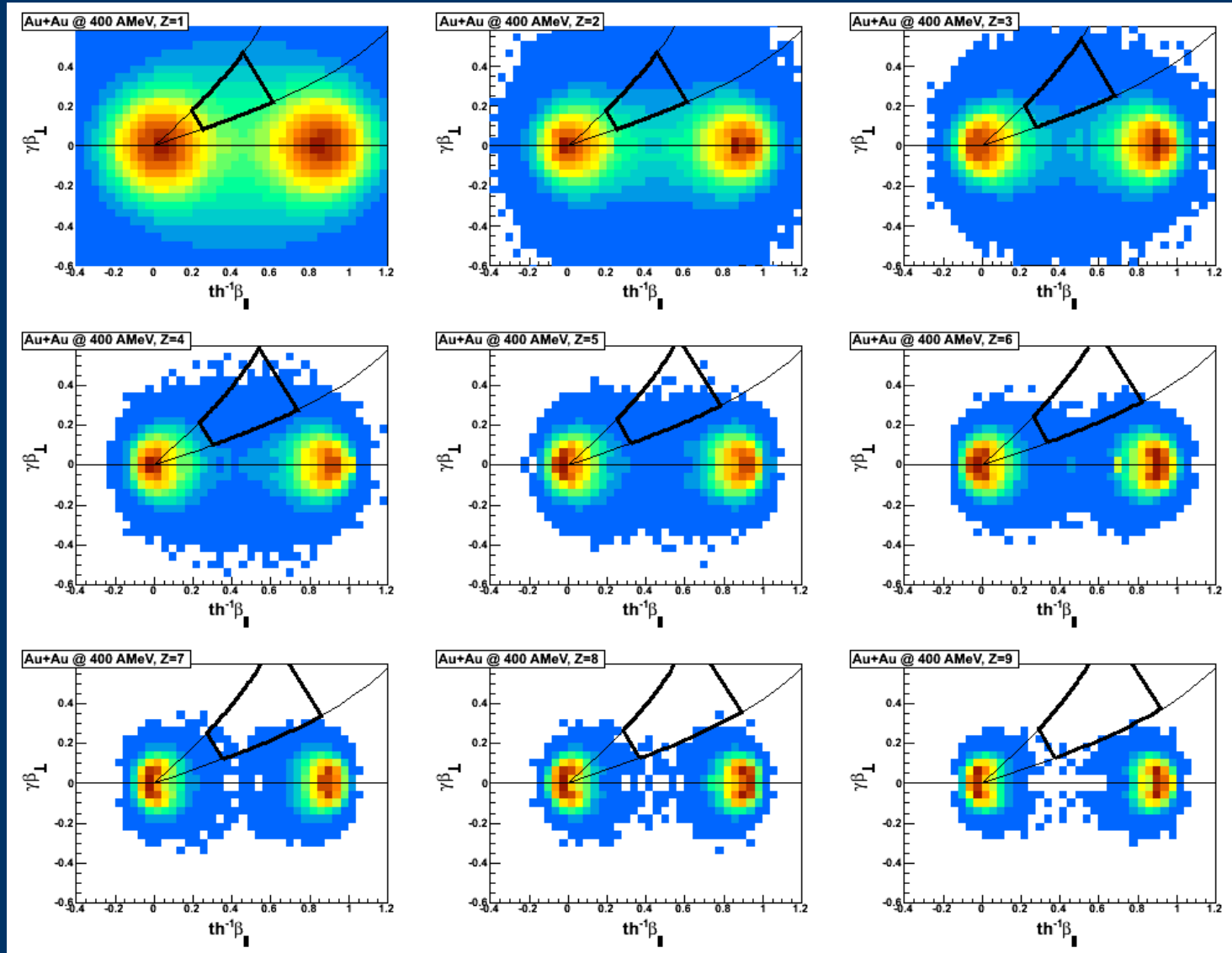


# ASY-EOS Experiment



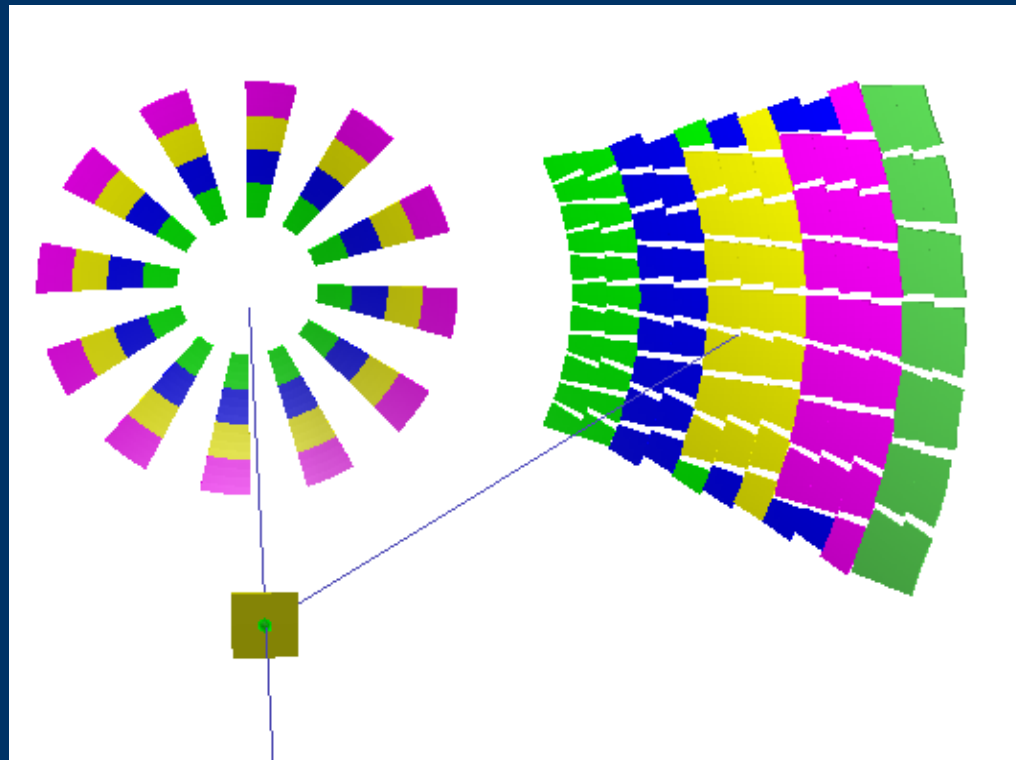
# ASY-EOS Experiment

UrQMD simulation for Au+Au, 400AMeV (K-F Lee)



# *Sideward Wall Detector*

- Increase number of modules up to 112 (~80 k€)
- Purchase of electronics (~190 k€)
- A new mechanical support corresponding to the new geometry





# *GSI: on beam tests*

- U+Pb, 350 AMeV
- $\theta=10$  deg
- CAEN V1724 8-channel, 14-bit digitizer
  - sampling 100 MHz
  - 1024 samples/signal ( $T=10 \mu\text{s}$ )

# An alternative: flash ADC?

- Low cost (CAEN prices)

## Standard electronics

Board	Unit price	pcs	Total price
V812B – 16 channel Constant fraction Discriminator	3 881 EUR	6	23 286 EUR
N625 – Quad linear FAN-IN FAN-OUT	1 458 EUR	20	29 160 EUR
V862AC – 32 channel multievent charge ADC with individual gate	5 107 EUR	9	45 963 EUR
		Total	<b>98 409 EUR</b>
<b>1025 EUR/channel</b>			

## Flash ADC board

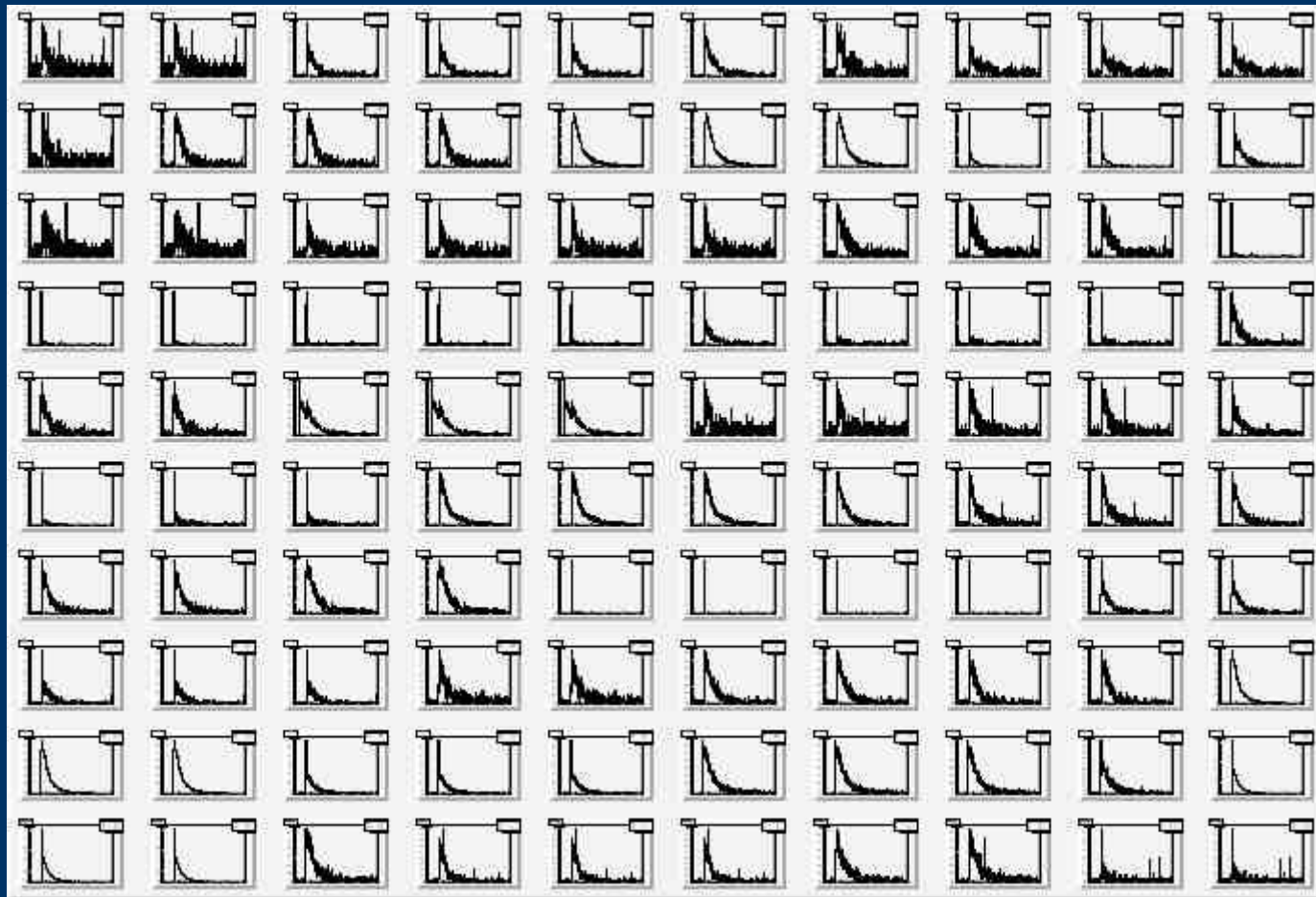
Board	Unit price	pcs	Total price
VX1720 - 8 Ch. 12 bit 250 MS/s Digitizer :1.25MS/ch, C4, SE	4 058 EUR	12	<b>48 696 EUR</b>
<b>507 EUR/channel</b>			

Using flash ADC boards is 50 % cheaper!



# *An alternative: flash ADC?*

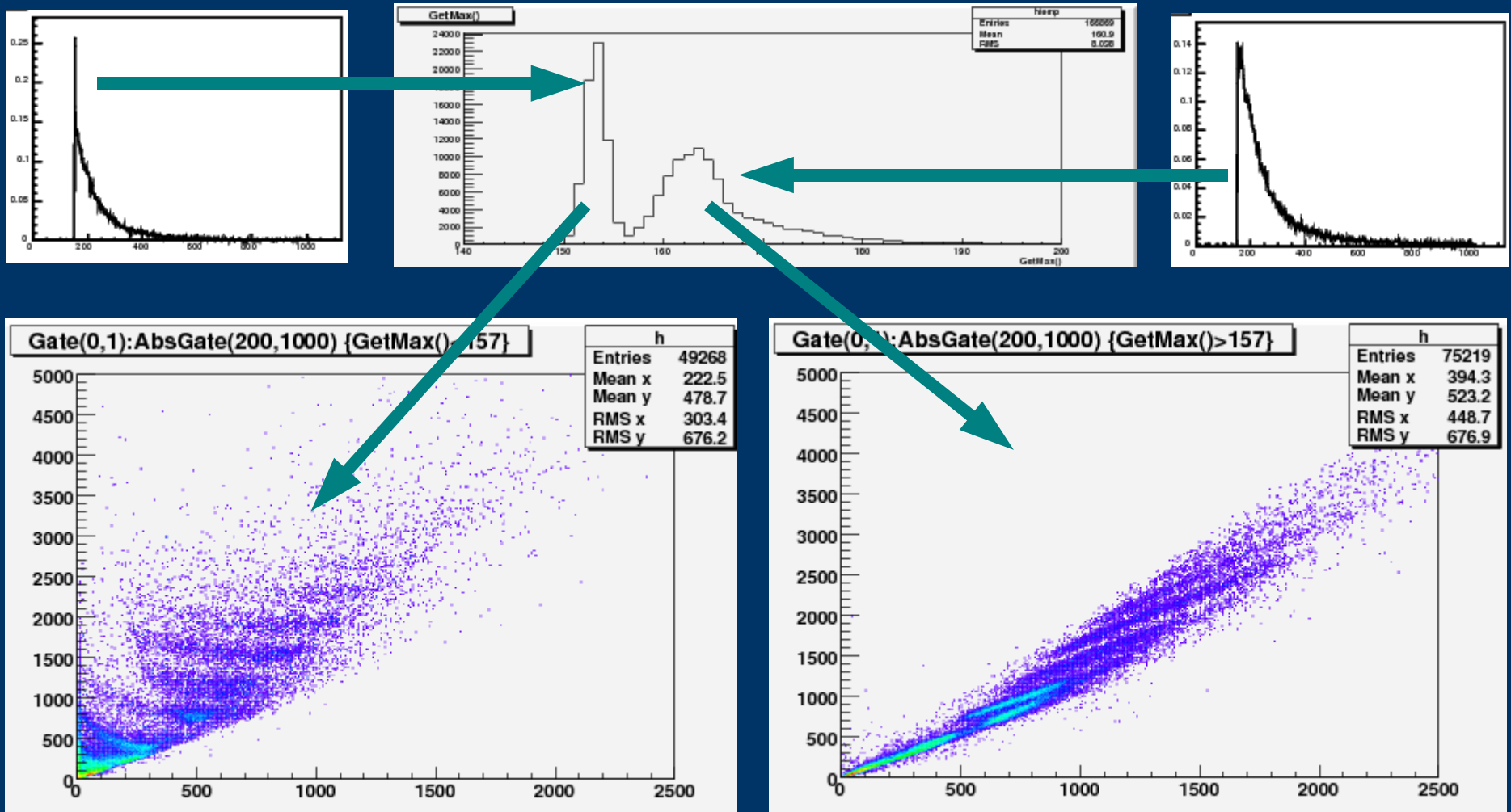
- Possibility of an off-line signal filtering.



Neuron network analysis

# An alternative: flash ADC?

- Possibility of an off-line identification tuning



## *An alternative: flash ADC?*

- Disadvantage: large data blocks to be read-out slow down the acquisition rate. An on-line data compression and filtering is necessary.



# Summary

- An universal forward-sideward phoswich detector is to be constructed and applied in the ASY-EOS experiments
  - Using flash ADC boards seems to be a good and promising alternative to standard QDC modules.
  - First tests performed in September at GSI show a good performance of the detector.
- 
-