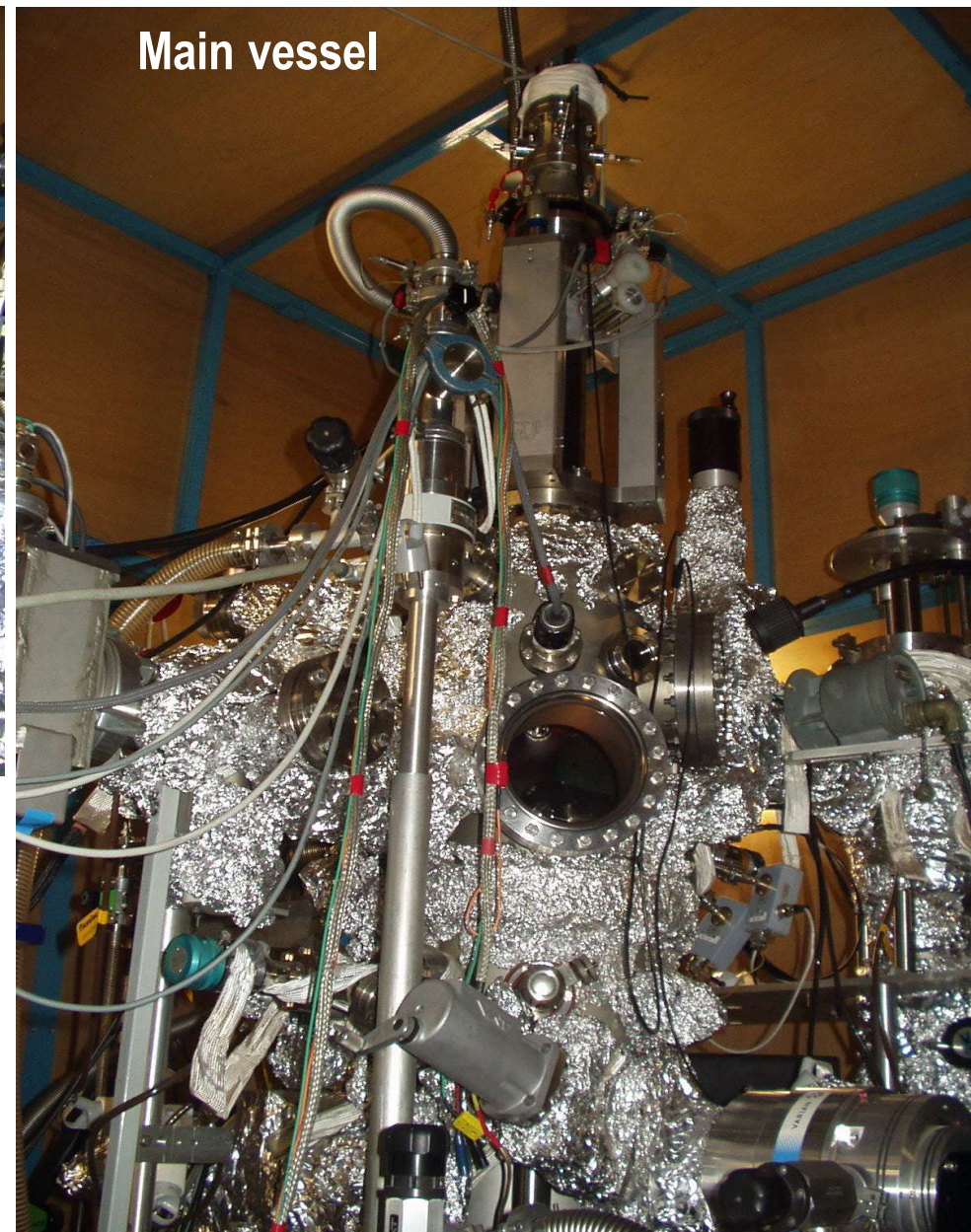
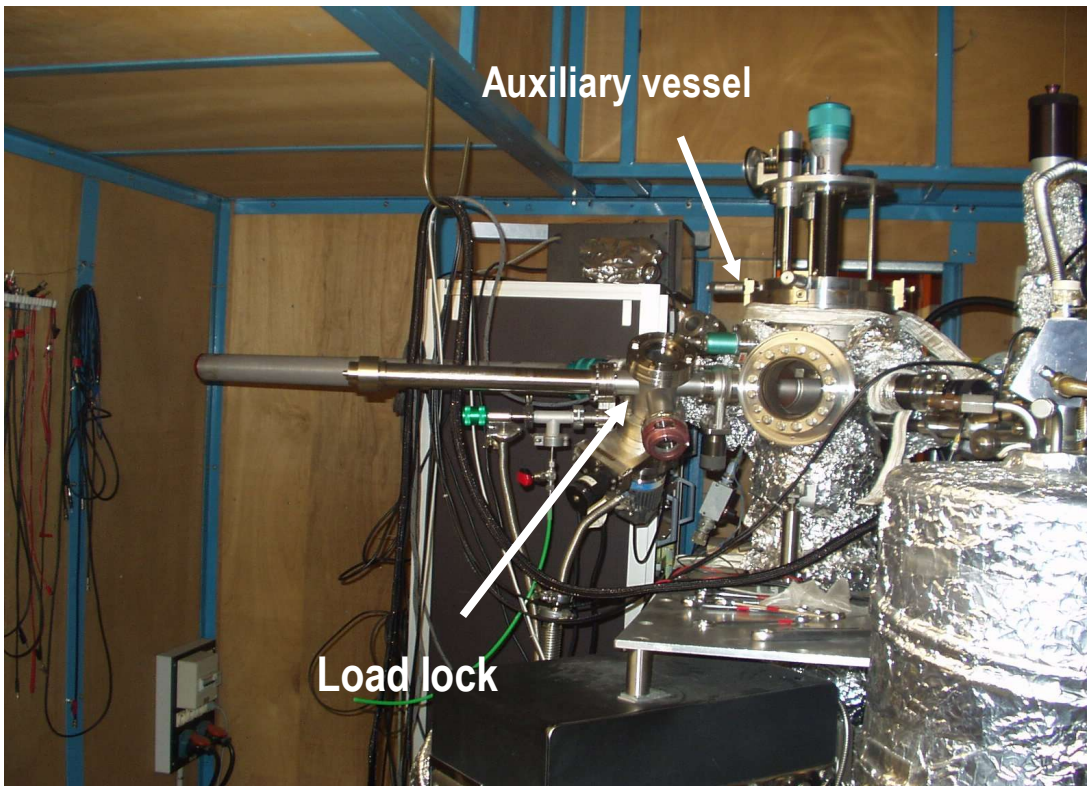


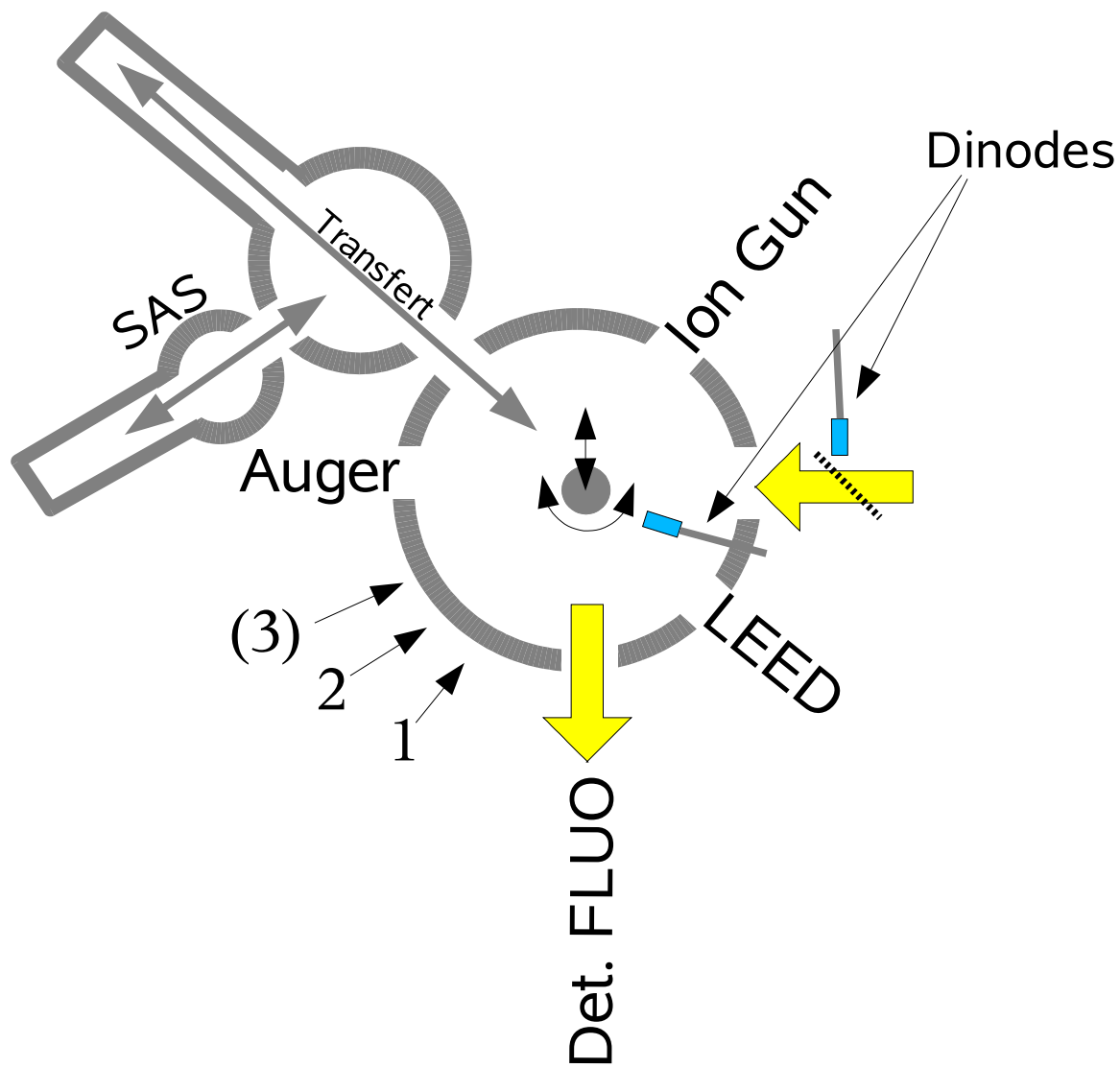


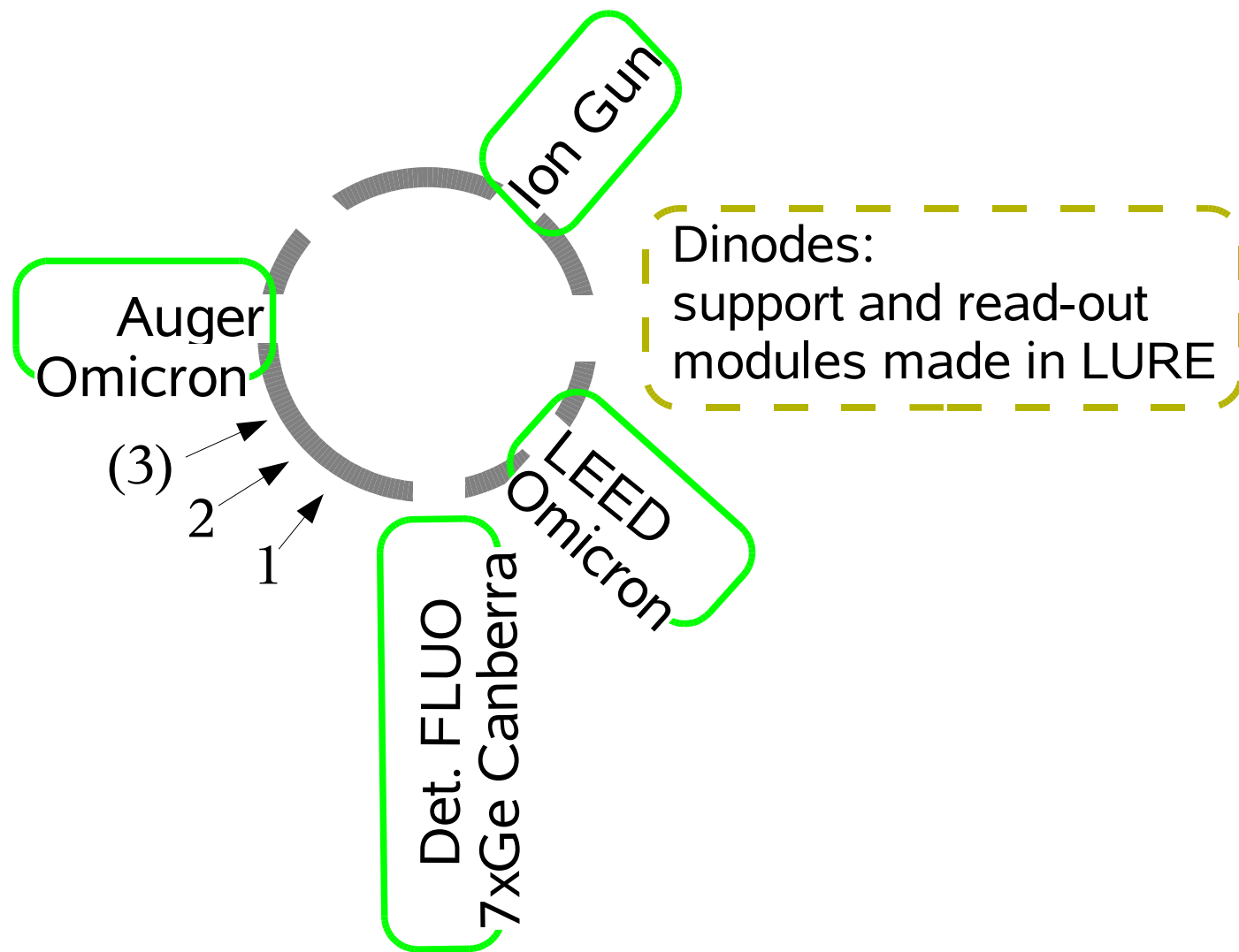
- *Surface EXAFS*
- *SAMBA and its detectors*

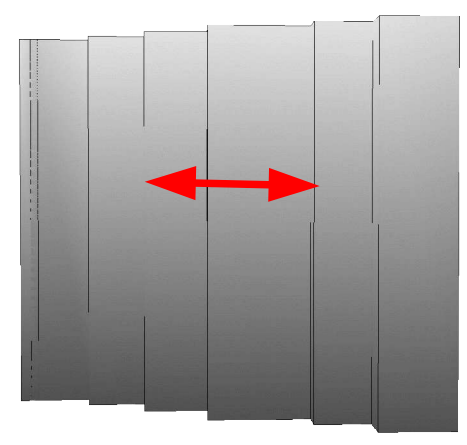
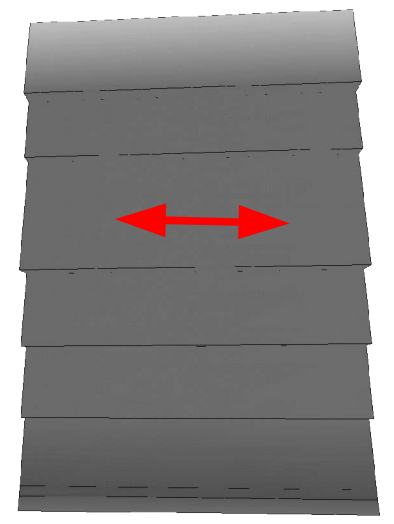
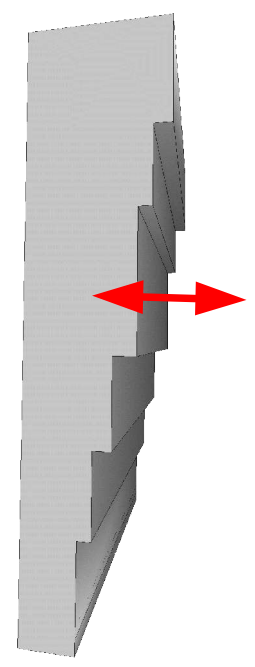
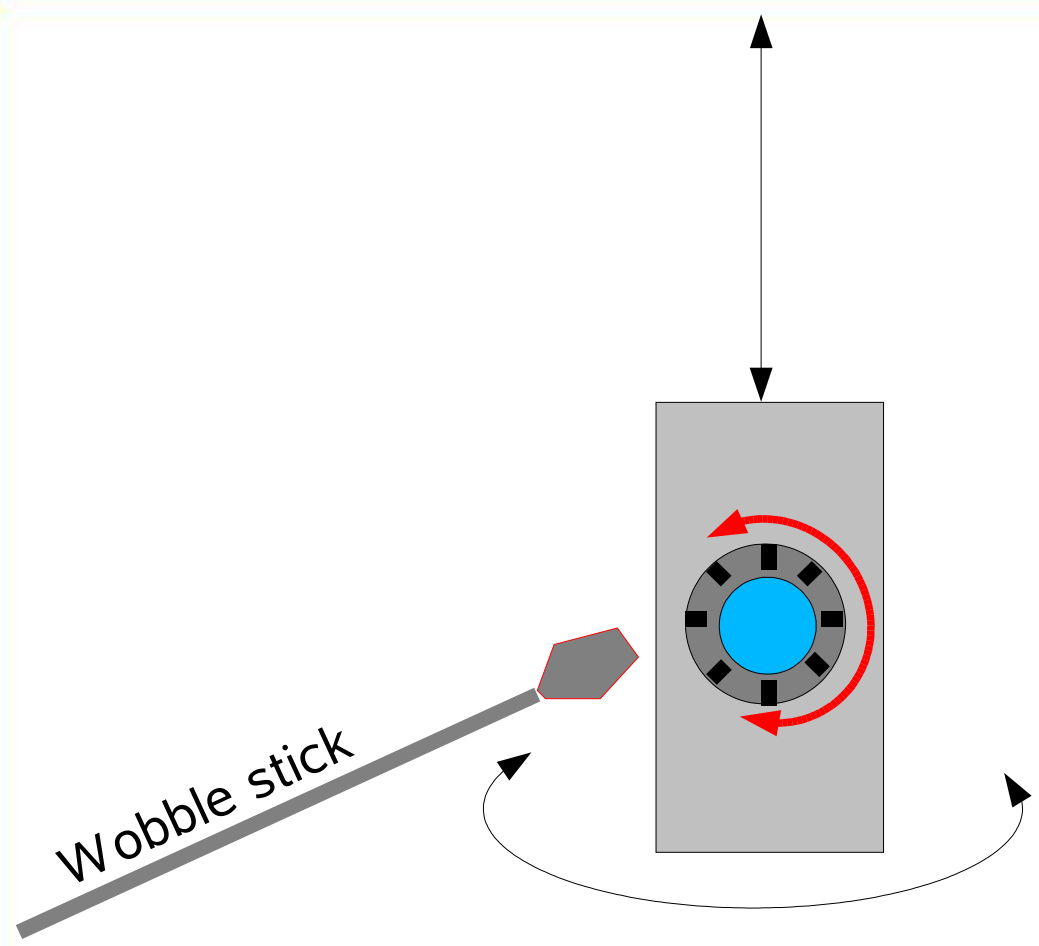
# Transfert from SEXAFS to SurfAS: **S**urfaces and **A**bsorption **S**pectroscopy



... a new name for the same experimental station:  
*H. Magnan, D. Chandesris, P. Le Fèvre, D.  
Ragonnet...*







# Morphologie et Structure de films minces de Co sur une surface vicinale Cu (1 1 1)

H. Magnan<sup>1,2</sup>, A. Chaumin<sup>1</sup>, P. Le Fèvre<sup>1</sup>, L. Barbier<sup>2</sup> et D. Chandèsris<sup>1</sup>

<sup>1</sup> LURE, Université Paris Sud ORSAY, <sup>2</sup> SPCSI, DRECAM, CEA Saclay,



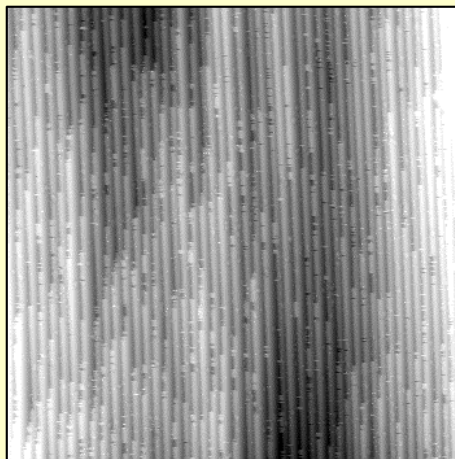
**But** : Origine de l'anisotropie magnétique uniaxiale observée pour Co/Cu(1 1 1)



Structure ou Morphologie ?

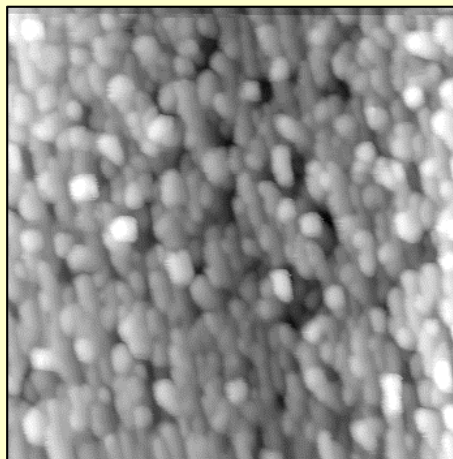
STM images (70\*70 nm) (SPCSI) : Morphologie du film de cobalt

Cu ( 1 1 1)



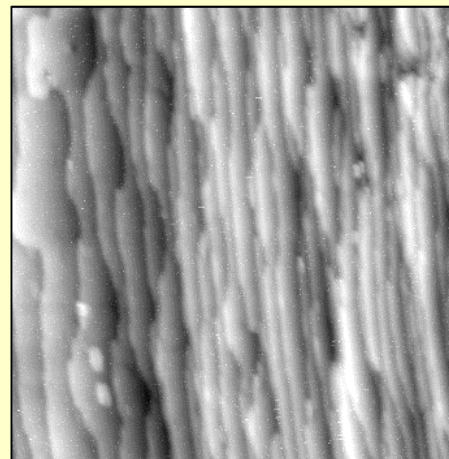
Marches  
régulières

1 MC Co/Cu



Ilots ronds

8 MC Co/Cu

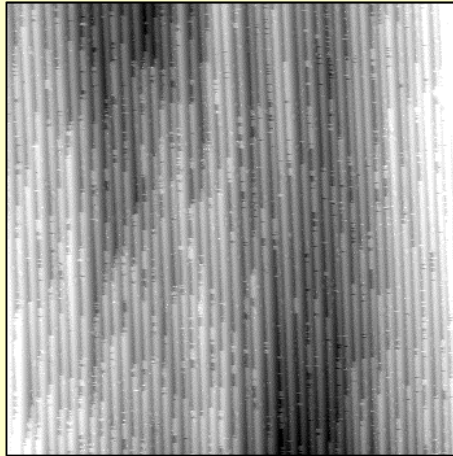


Terrasses doubles



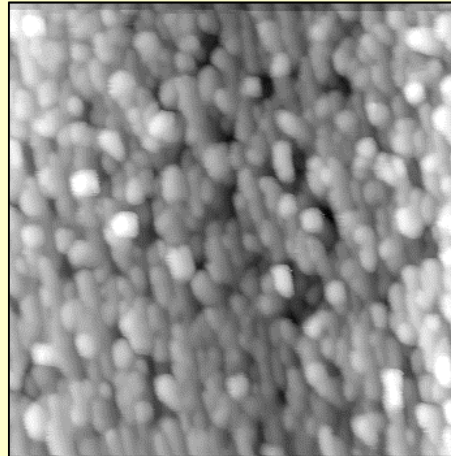
**STM images (70\*70 nm) (SPCSI) : Morphologie du film de cobalt**

Cu (1 1 1)



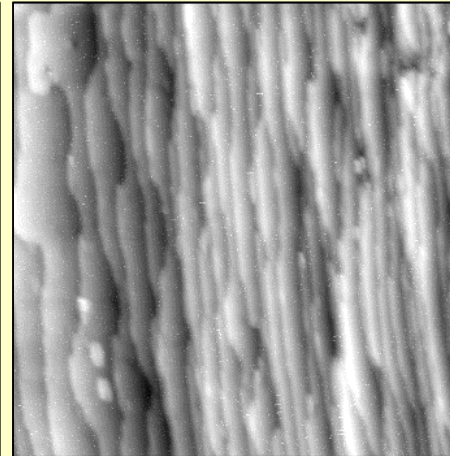
Marches régulières

1 MC Co/Cu



Ilots ronds

8 MC Co/Cu

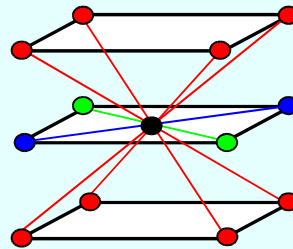


Terrasses doubles

**EXAFS de Surface (LURE): Distances premiers voisins autour du Co**

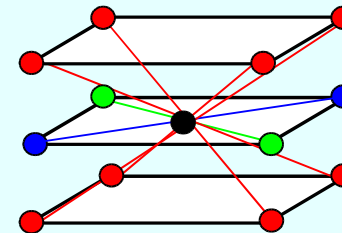
$R_{Cu \text{ bulk}} = 2,55 \text{ \AA}$

$R_{Co \text{ bulk}} = 2,50 \text{ \AA}$



$R_{HP} = 2,52 \text{ \AA}$

$R_{PA} = R_{PE} = 2,52 \text{ \AA}$



$R_{HP} = 2,50 \text{ \AA}$

$R_{PA} = R_{PE} = 2,55 \text{ \AA}$

**Conclusion**

$R_{PA} = R_{PE}$



Origine morphologique de l'anisotropie uniaxiale



## SEXAFS status:

- The entire SEXAFS experimental station is ready and available;
- On Ion pumping at LURE... quite soon under nitrogen until 2006.

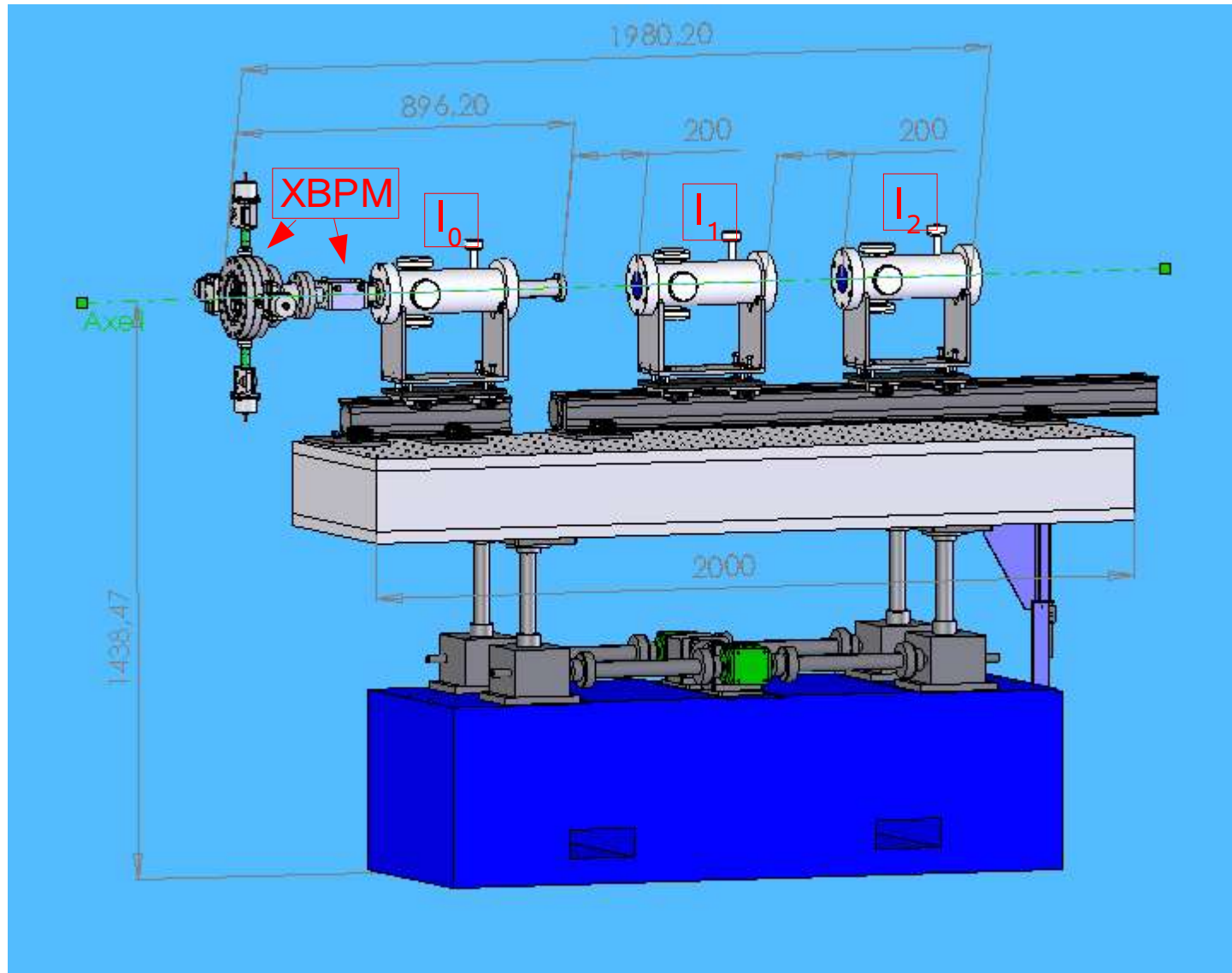
## SEXAFS upgrade:

- **SOLEIL standards compatibility/security issues**
- **Dry pumping : advantages and problems...**
- The evaporation sources are currently horizontal...
- Redesign of a part of the main vessel to approach the ion pump.
- Redesign of the sample holders to accept a standard Omicron STM holder?
- Interface for a HV bag?
- **Partial yield?**
- ➔ A new design for the vessels will not be ready before the end of 2007

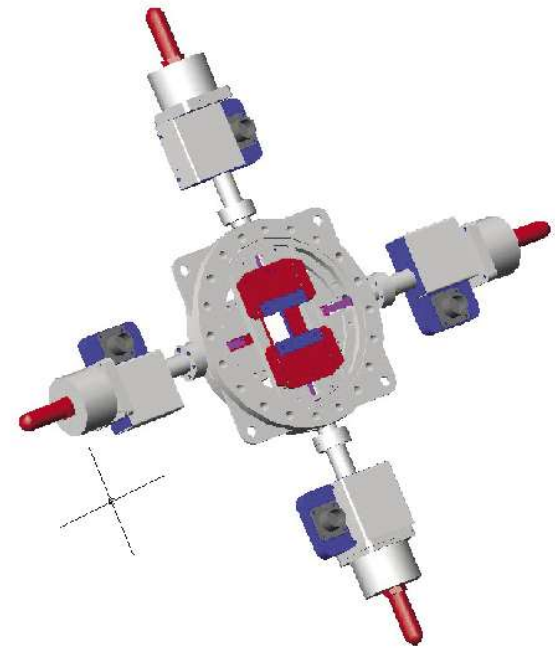
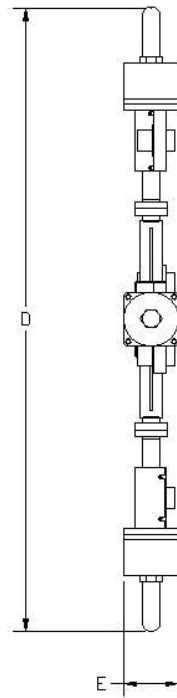
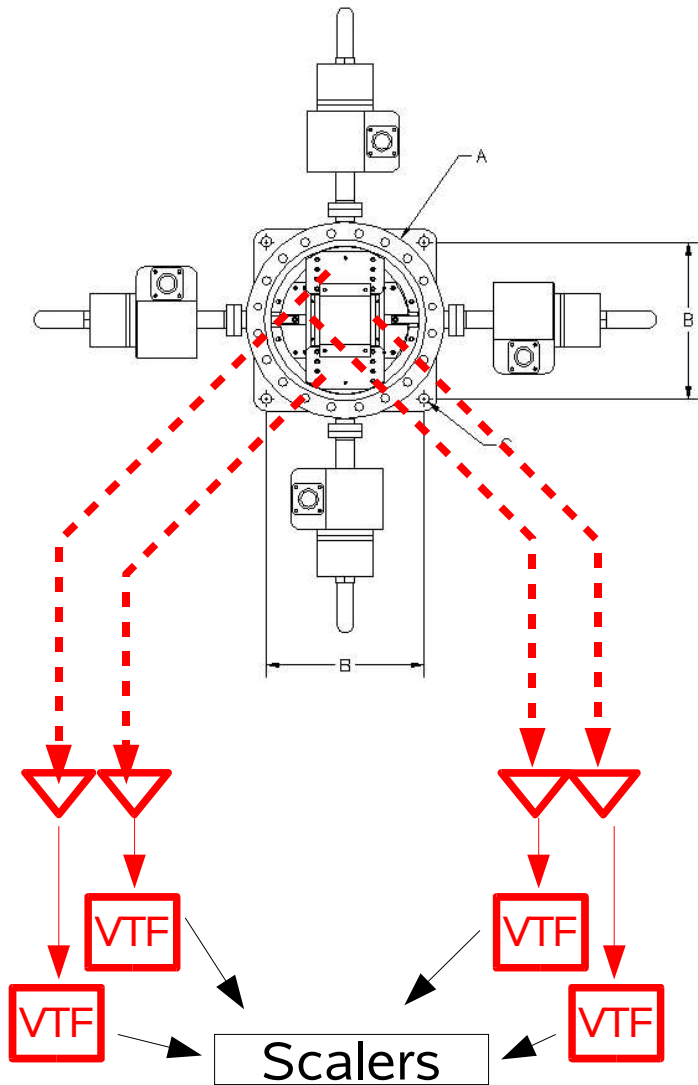
# Detectors

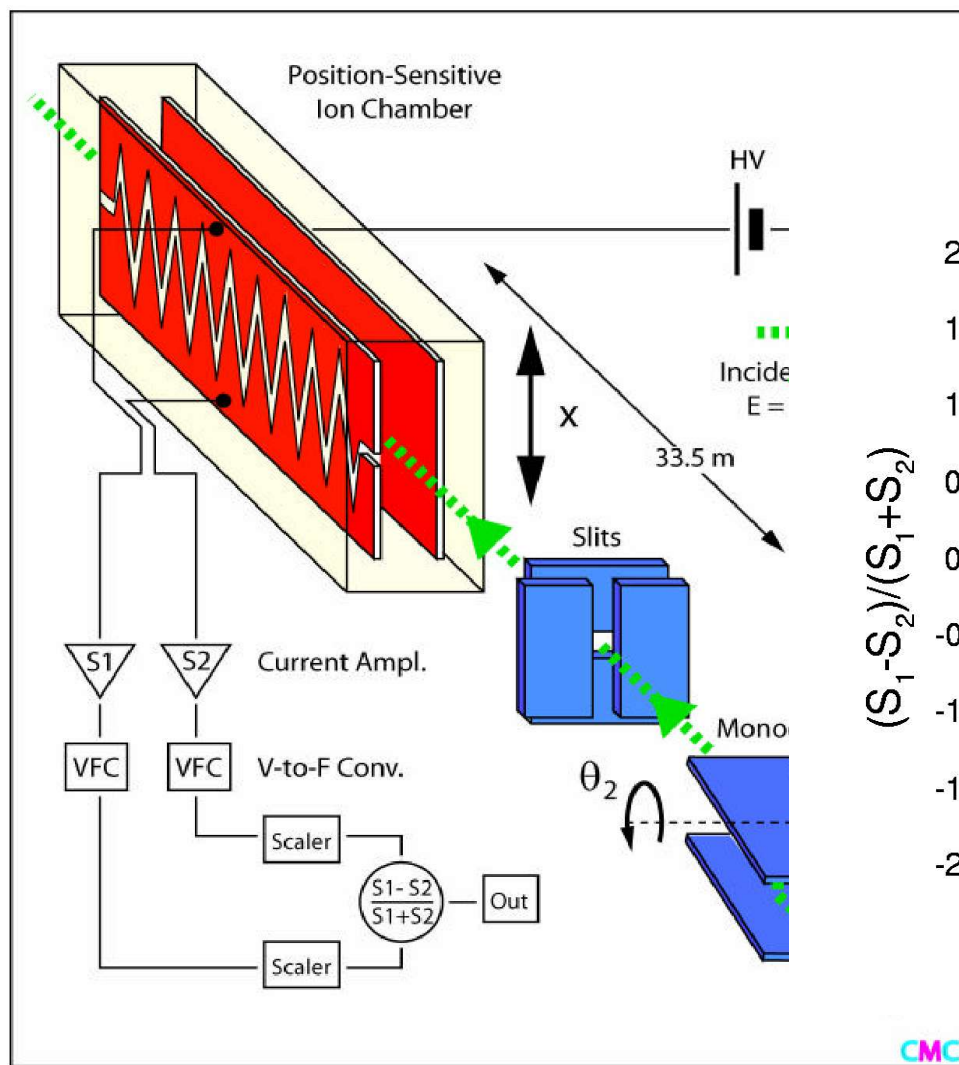


EXAFS

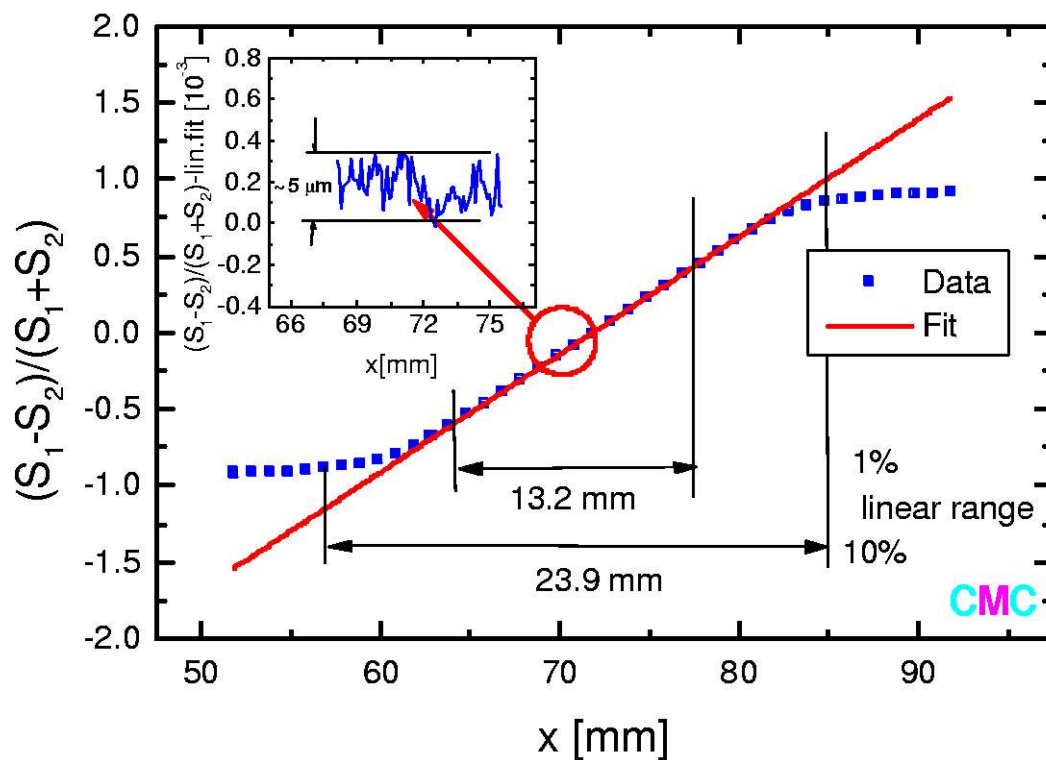


*TEY – XBPM on electrically isolated blades*





Split Ion Chamber #2 (24 mm width)



$$I_0, I_1, I_2$$

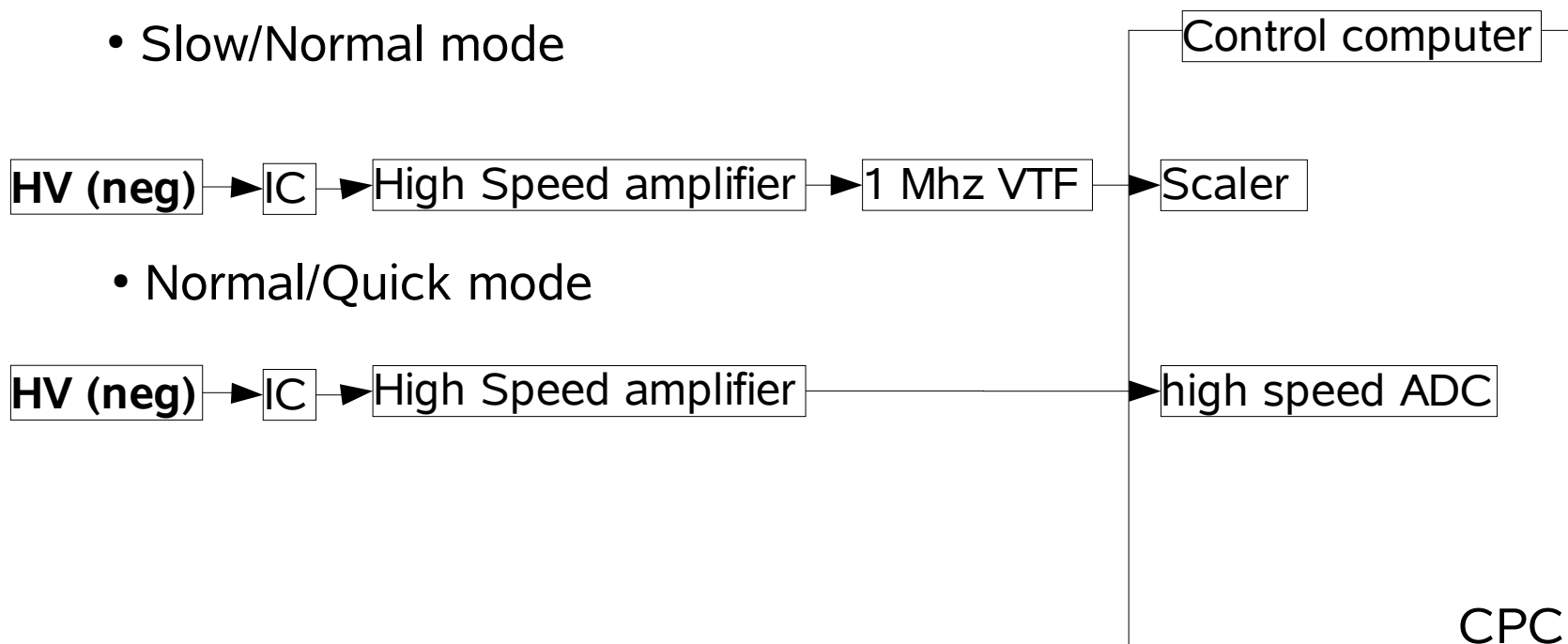


## Intensity detectors: ionisation chambers

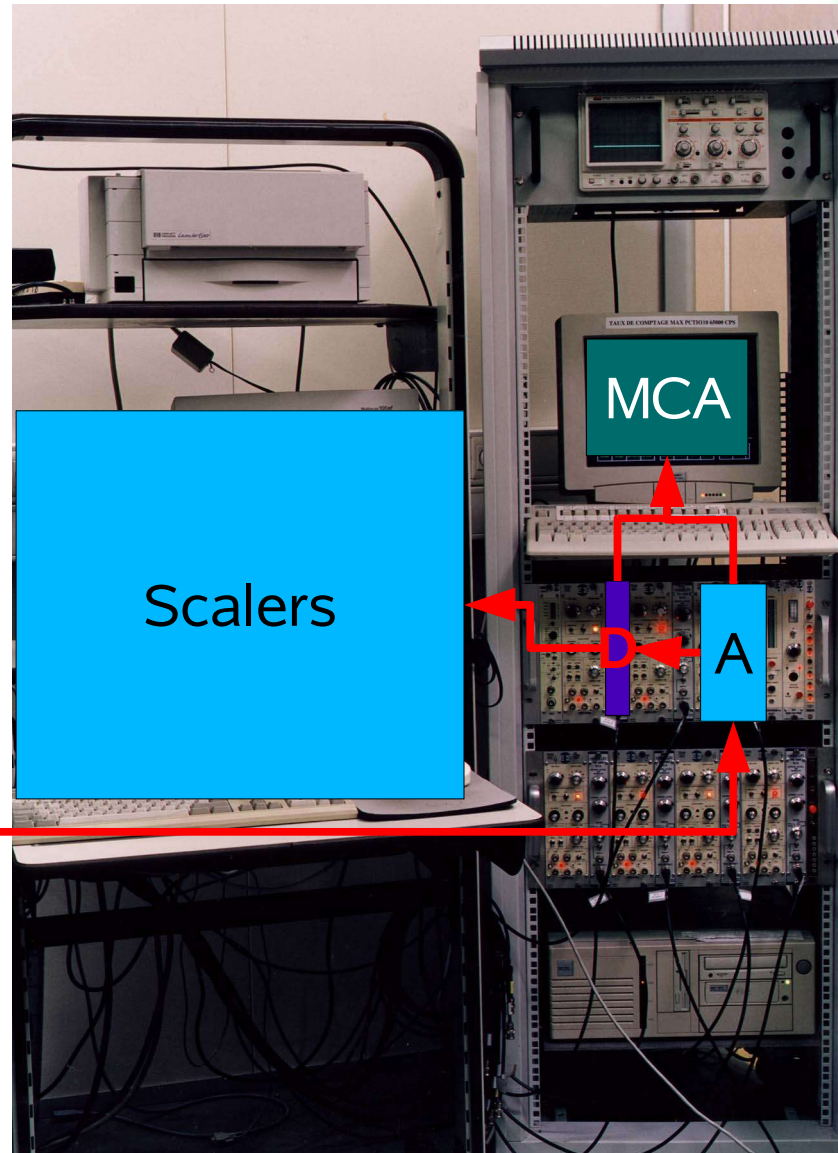
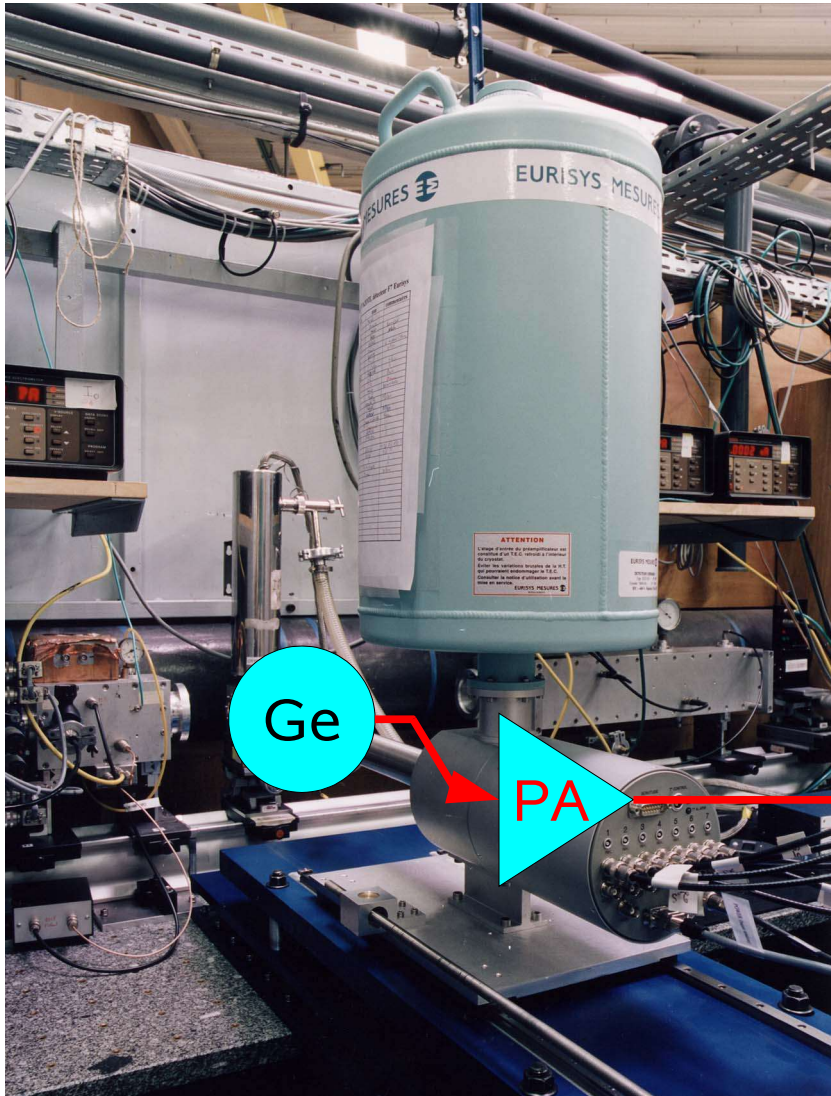
- Insensitive to small beam movements
- Low noise
- High number of counts
- Cover entire beam line energy range by changing the gas

## Readout electronics:

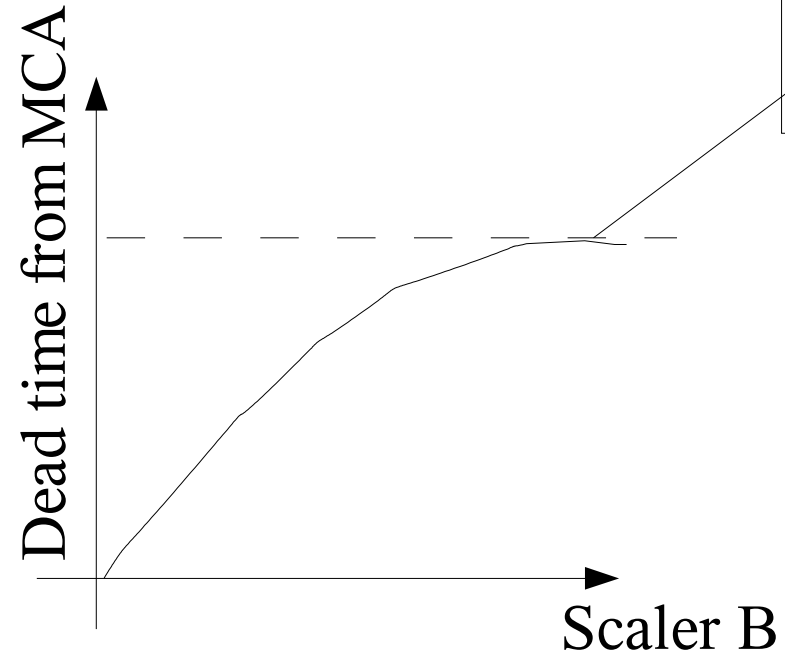
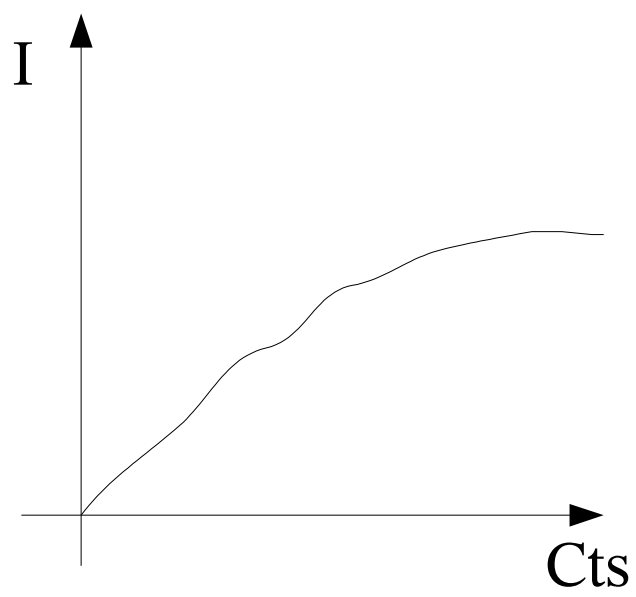
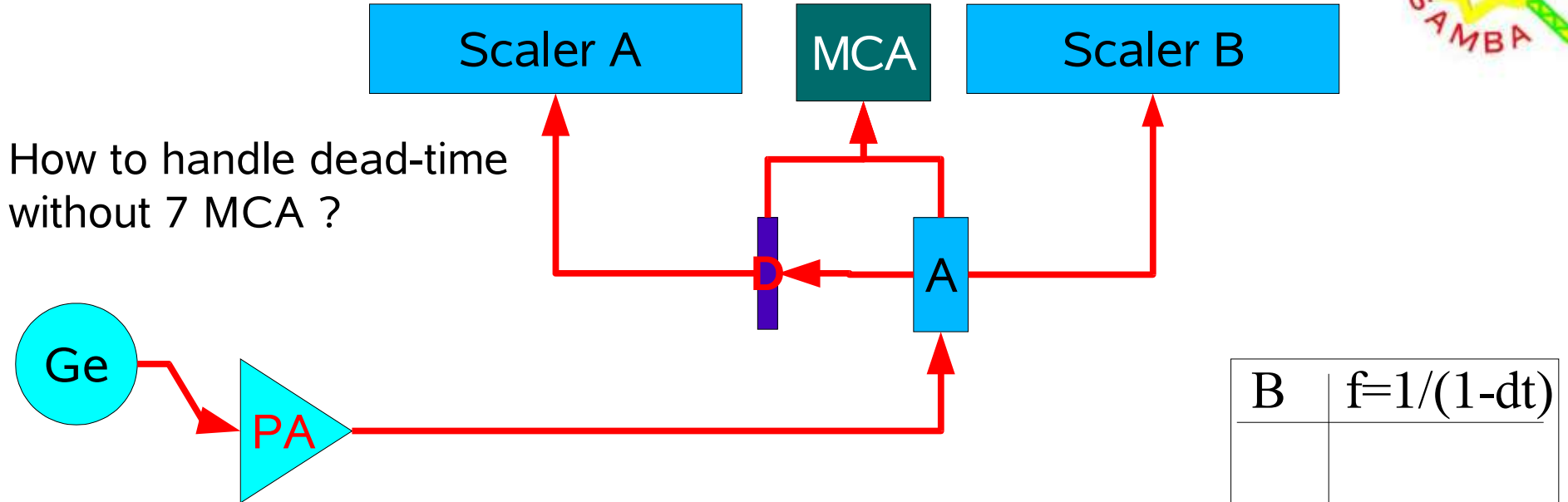
- Slow/Normal mode



# Energy dispersive solid state fluorescence detectors

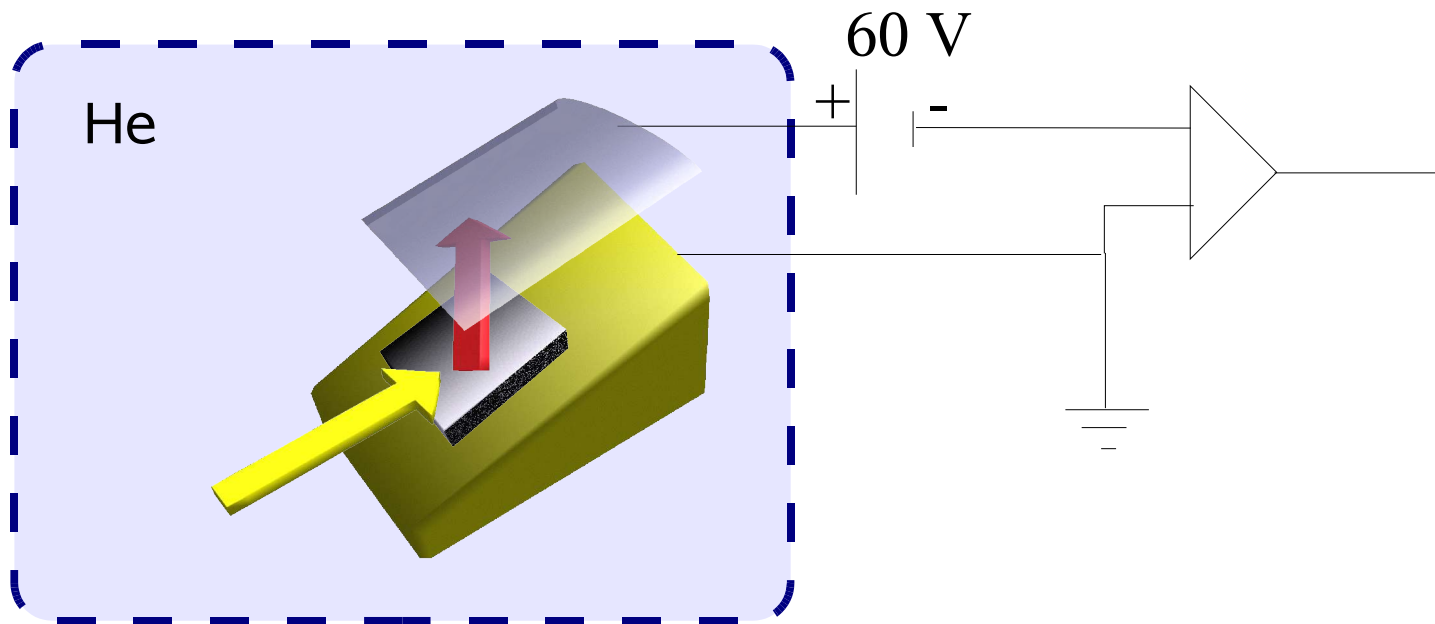


# Energy dispersive solid state fluorescence detectors



|          |              |
|----------|--------------|
| B        | $f=1/(1-dt)$ |
| $A'=A*f$ |              |

## D42: total electron yield at atmosphere pressure



### *Advantages:*

- It amplifies the signal
- Sensitive
- Simple design

### *Drawbacks:*

- Easily deviate from linearity:
  - DCI (large and very stable beam). 😊
  - Elettra, Hasylab: 😞
- Sensitive to He gas pressure fluctuations

**TODO:** redesign a small prototype and achieve optimum linearity and stability



Other detectors:

- TEY on SEXAFS: dinodes or sample current.

### **Perspectives:**

- Silicon drift detector for higher speed fluorescence measurement
- Absolute energy calibration (?)
- Quick-EXAFS/XRD measurements