

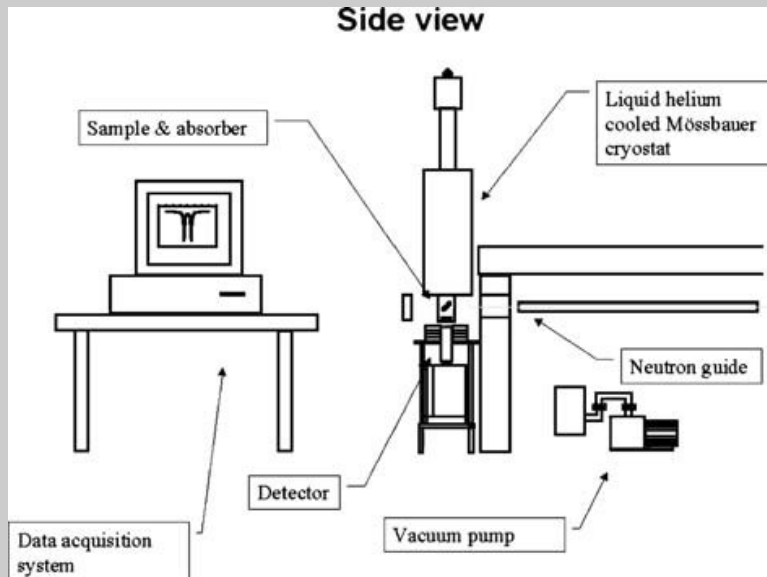
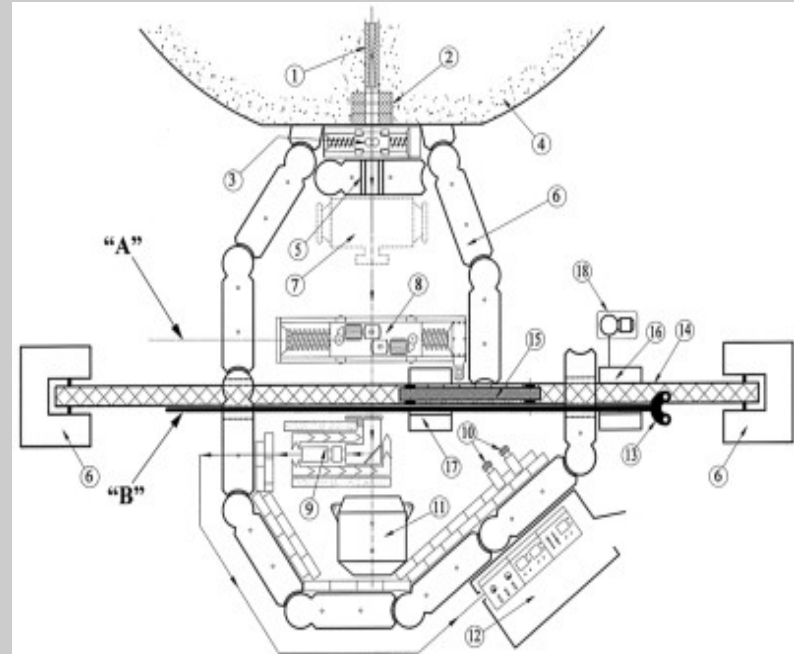
INSTRUMENTAL DEVELOPMENTS AT BNC

MÁRTON MARKÓ

**WIGNER RCP
BNC**

ON-GOING INSTRUMENTAL DEVELOPMENTS

- Imaging station
- FSANS
- In-beam Mössbauer spectrometer



Reconstruction of the **PSD** diffractometer

- **New sample environment**
- Changing the detectors
- Changing the electronic system (EPICS)

Cu(111) crystal monochromator

$$\lambda = 1.07 \text{ \AA}$$

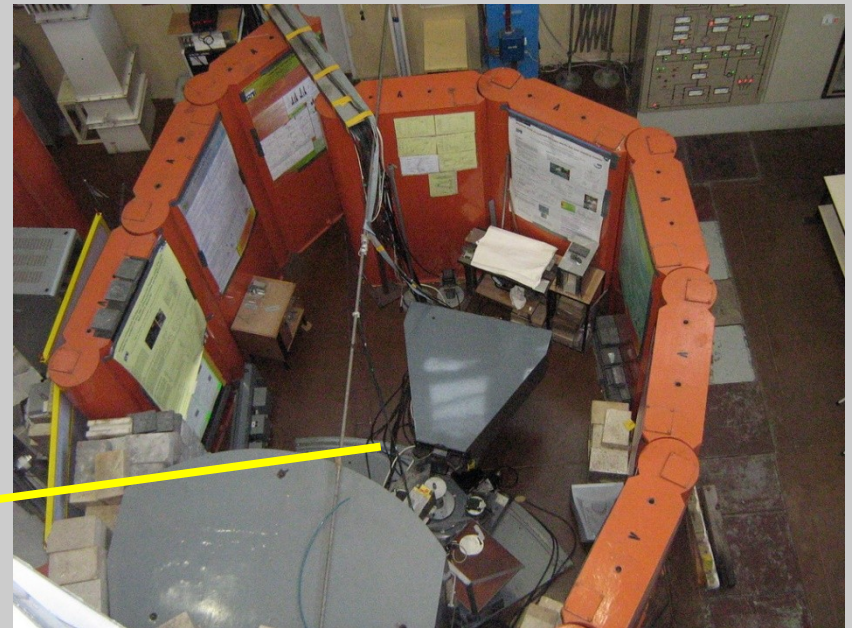
$$2\theta = 8\text{-}115^\circ; Q = 0.45\text{-}10 \text{ \AA}^{-1}$$

$$Q = 4\pi \sin\Theta / \lambda$$

Sample: 2-4g
powder

Measuring
time: 24h

Vanadium
can, \varnothing : 5&8mm



He-3 linear sensitive
position (60cm) detectors

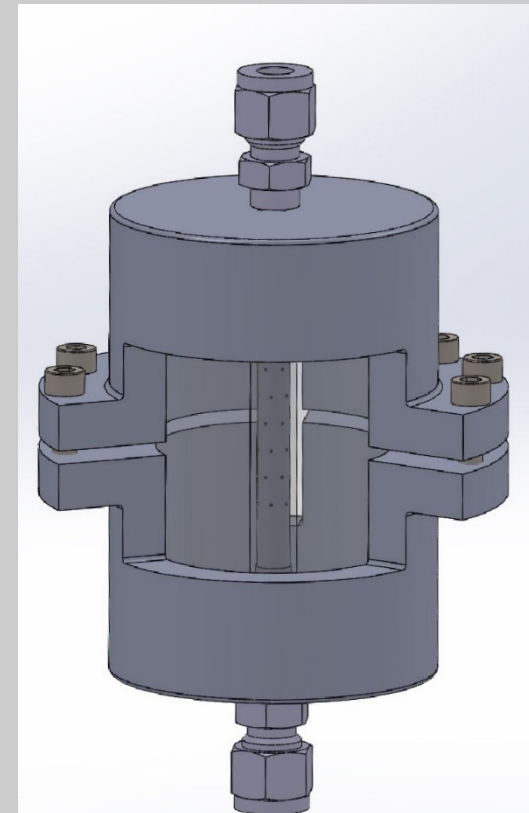
New in-situ cell, to solve structure by direct method, in real time – under installation

High Pressure and Temperature Cell, **HTP_CELL**: own development
by Margit Fábrián & József Janik

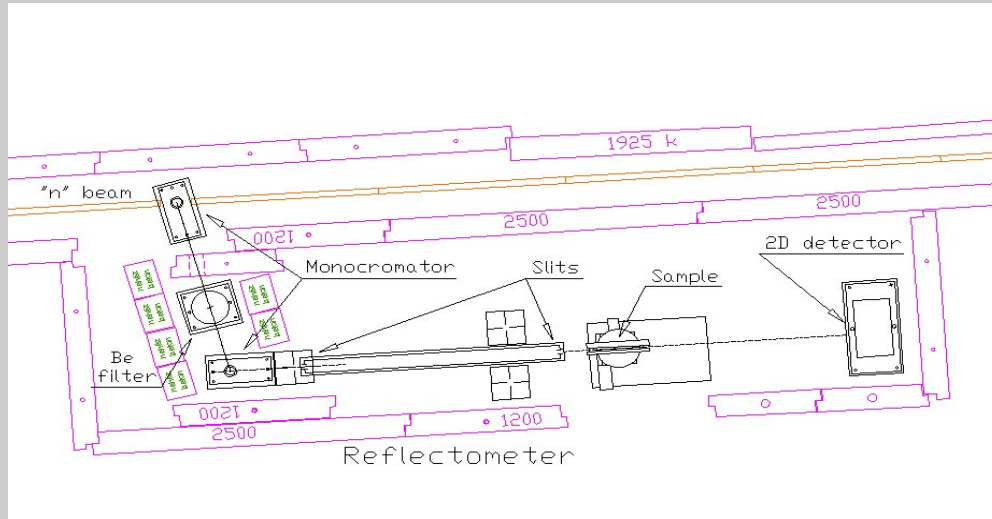
Temperature and pressure interval:

TiZr cell: T_{max} : 450°C; p_{max} : 300 bar
(Ti 52.5% – Zr 47.5%, null matrix alloy)

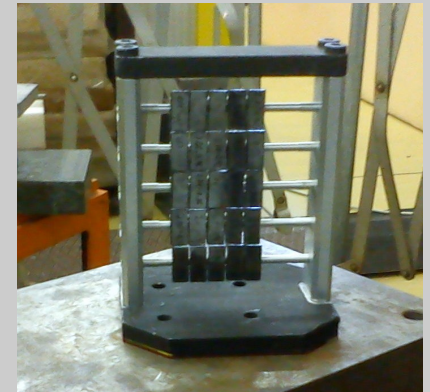
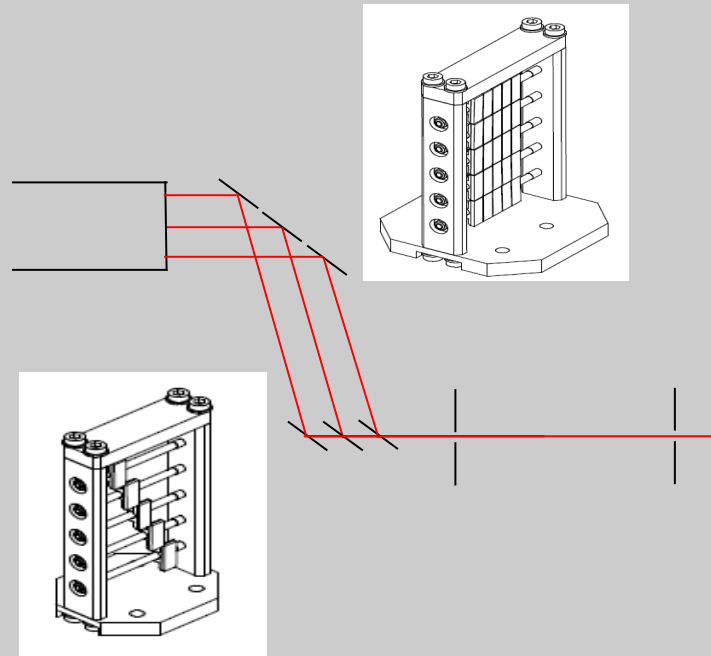
Sapphire cell: T_{max} : 950°C; p_{max} : 300 bar



Reconstruction of the reflectometer



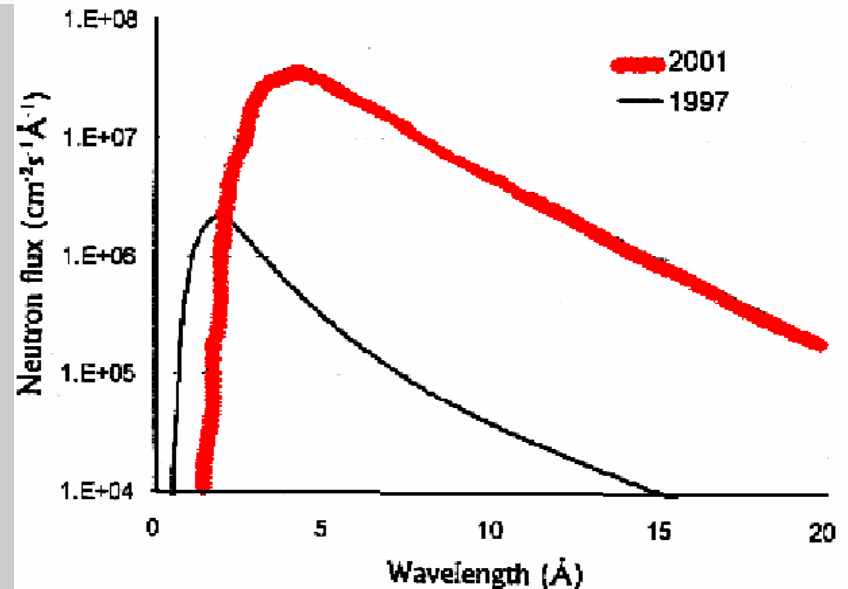
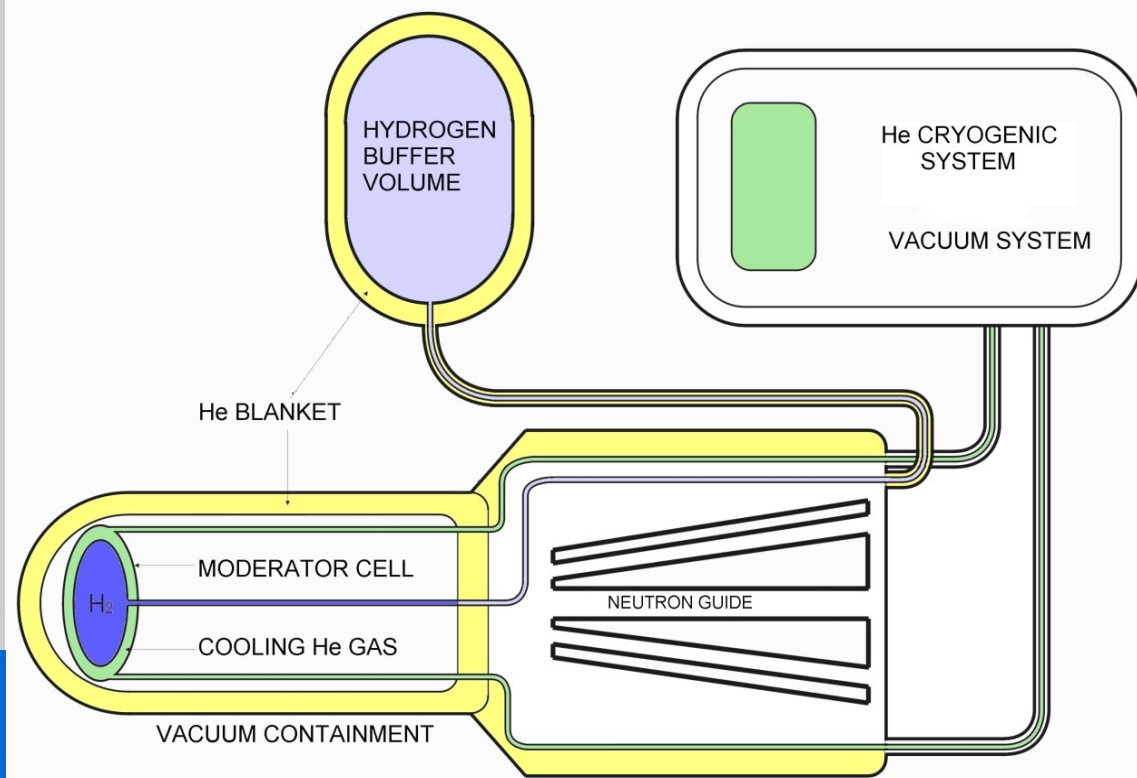
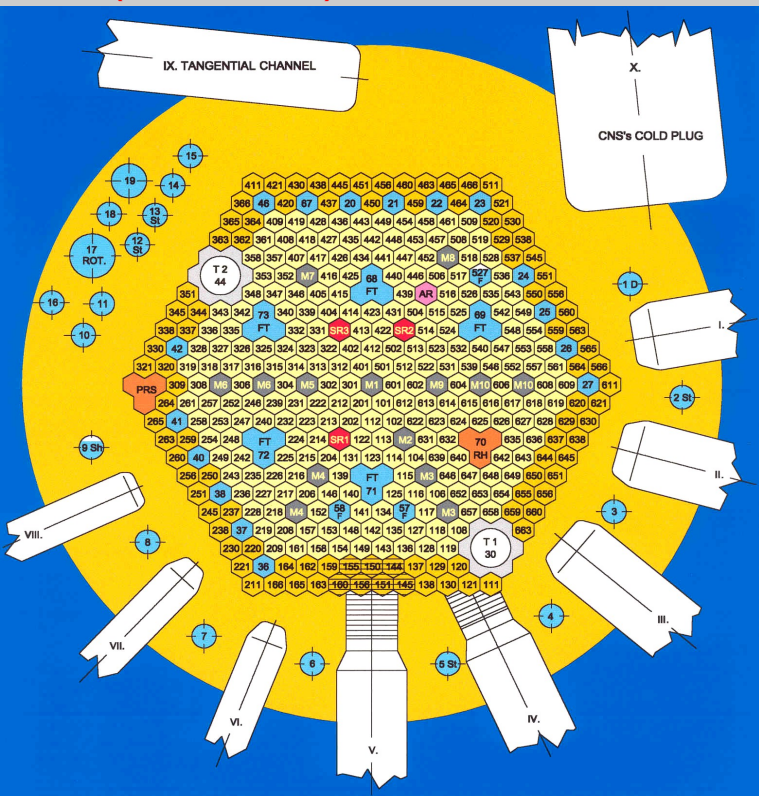
- $\lambda=4,28 \text{ \AA}$
- Be filter
- 2D He3 detector



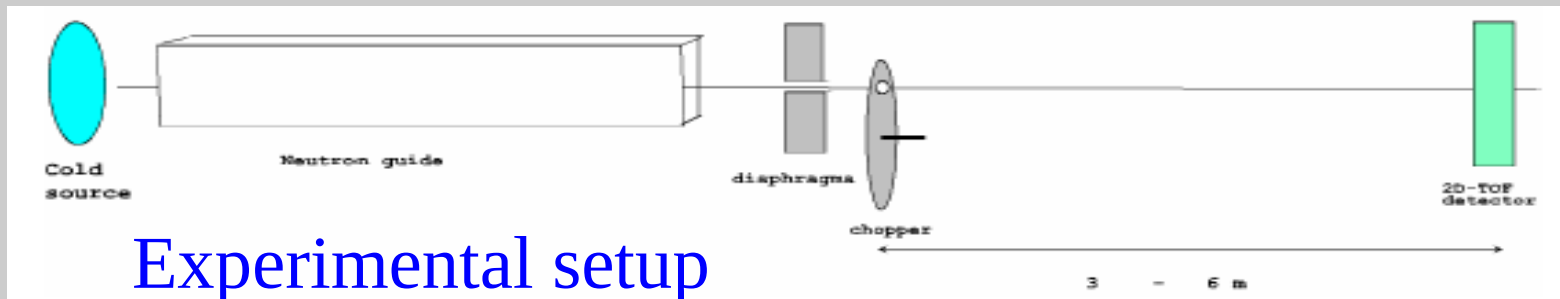
Liquid Hydrogen Cold Moderator

Further development

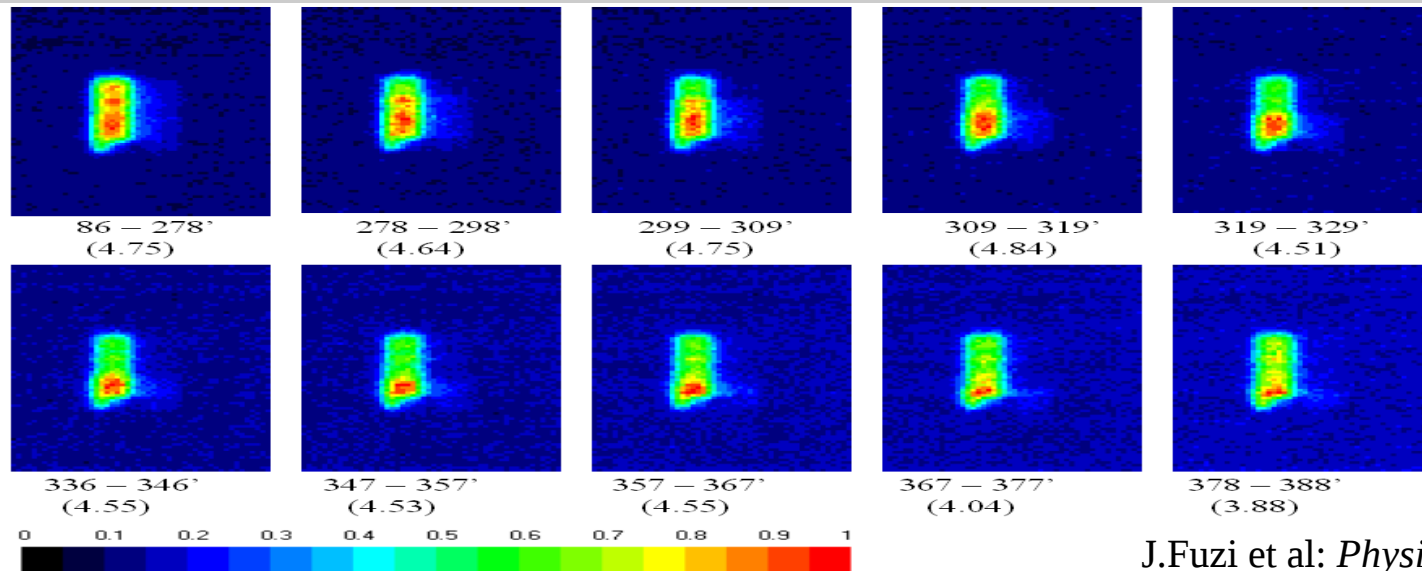
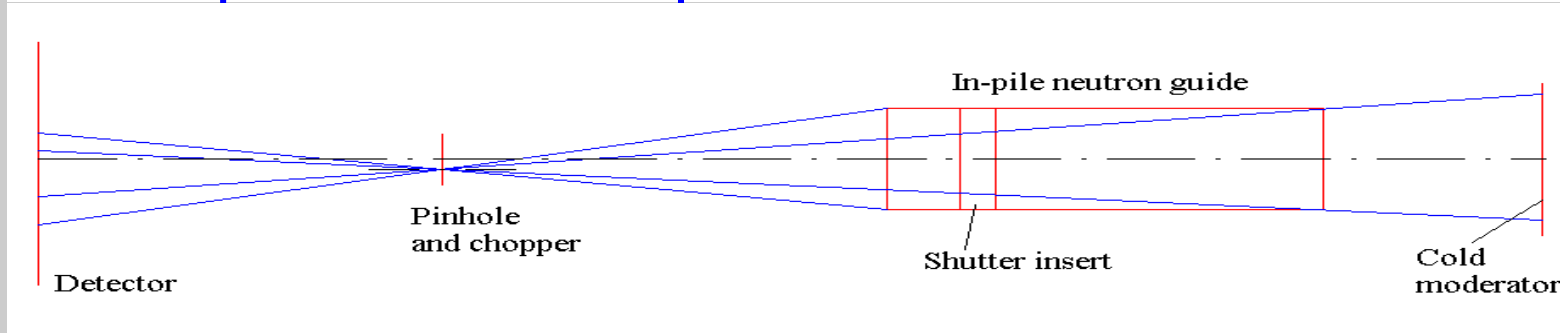
- Low dimensional moderator
- Changeable O-P ratio
- Optimized guide system (INFRADEV)



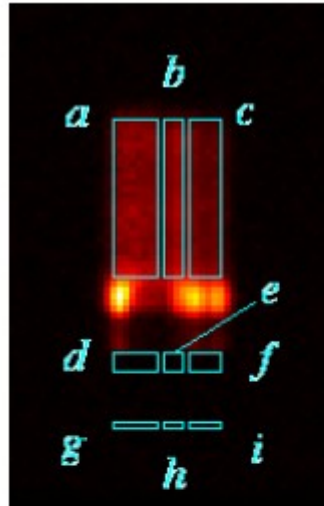
Direct measurement of CNS moderator



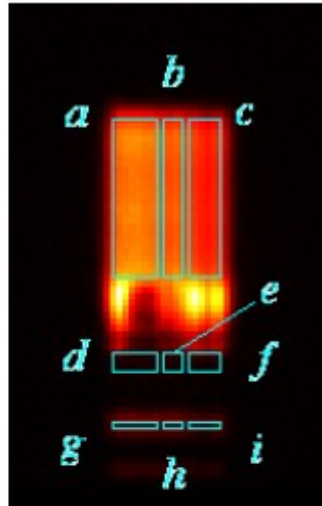
Experimental setup



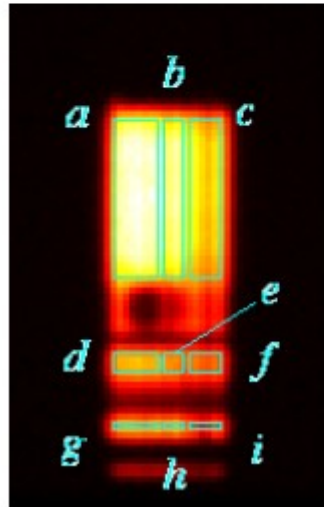
Beam extraction system characterization



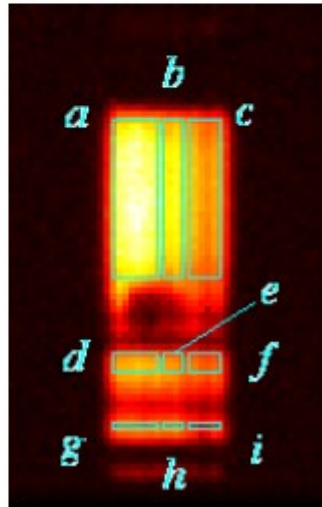
0.5 – 1 Å (0.04 n/s/pixel)



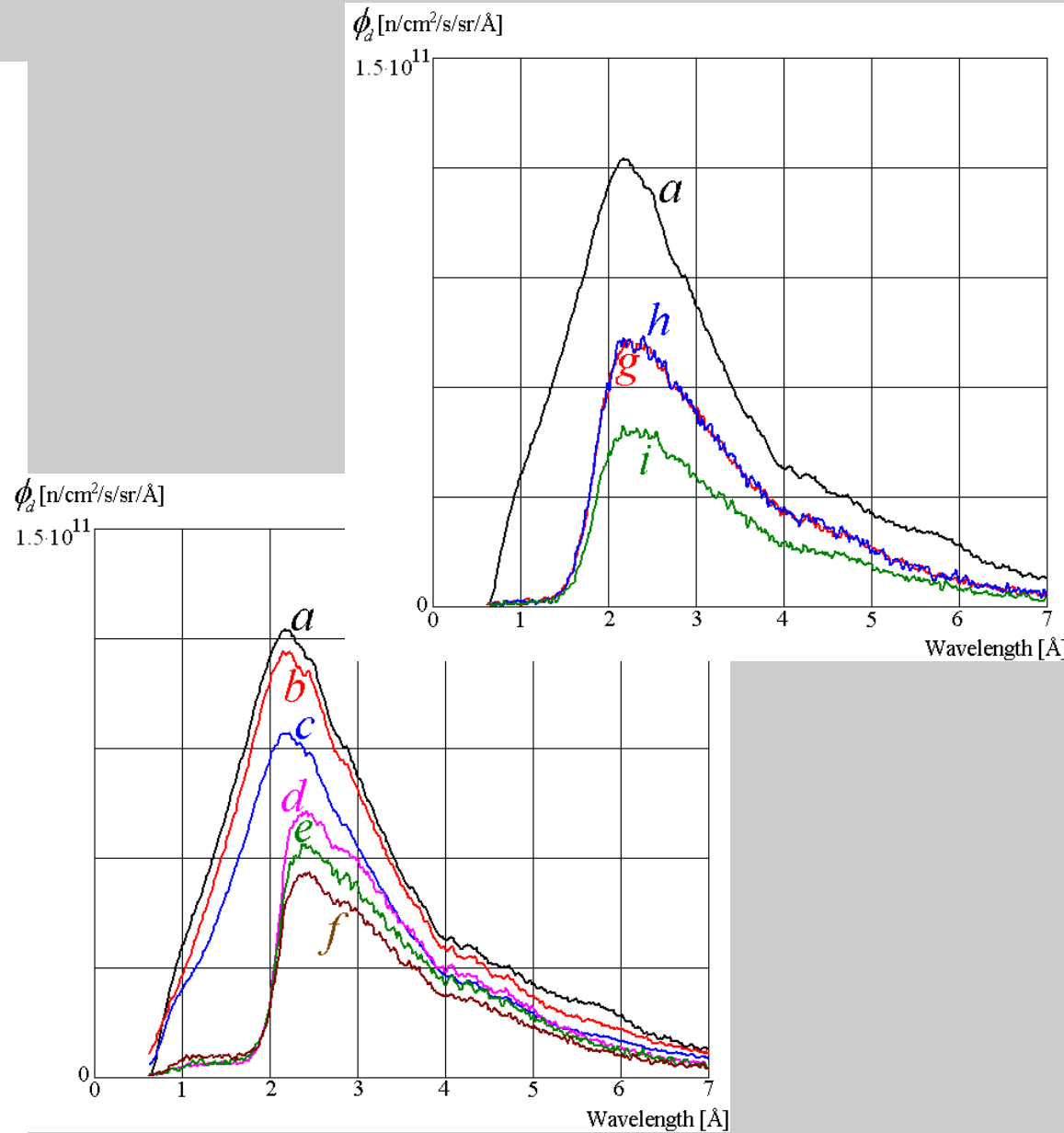
1 – 2 Å (0.12 n/s/pixel)



2 – 4 Å (0.14 n/s/pixel)



4 – 7 Å (0.06 n/s/pixel)

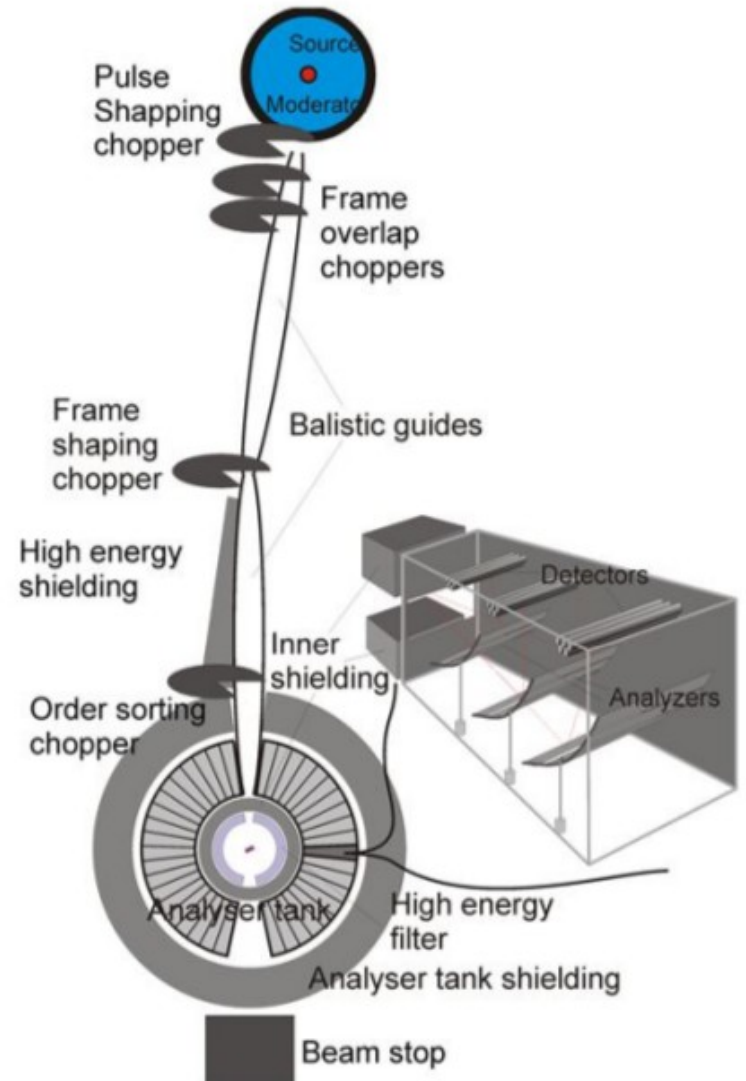
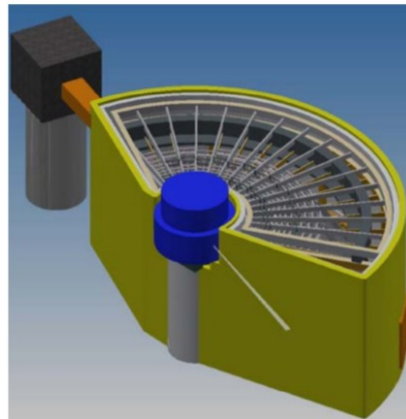
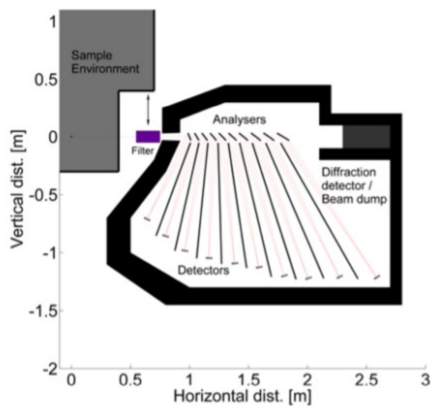


ESS INSTRUMENTATION

- CAMEA
- MIRACLES
- HERITAGE

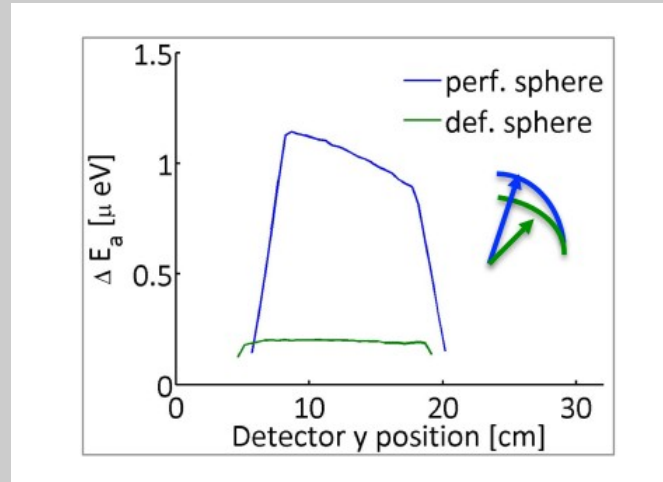
CAMEA

- Background
- Analytical calculations



Miracles

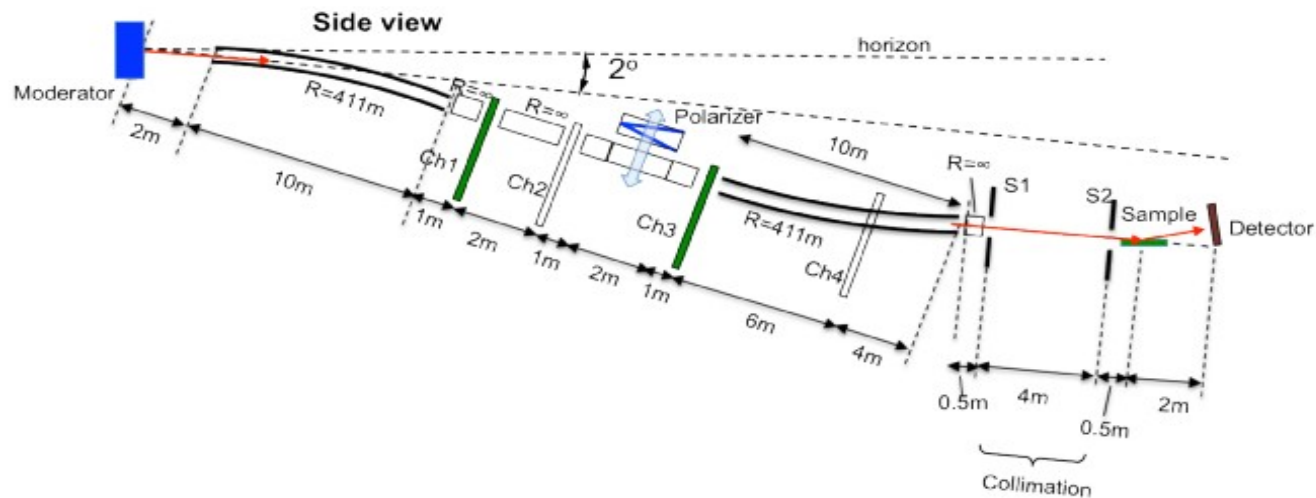
- Design of back end
- Analytical calculations
- Ray tracing simulations
- New analyser geometry



Heritage polarized reflectometer

- Design of back end
- Analytical calculations
- Vitess simulations
- Conventional reflectometry
- Liquid nose
- Focusing GISANS option

2015 Round Instrument Construction Proposal
Revision Date 15/01/2015



THANK YOU
FOR ATTENTION