

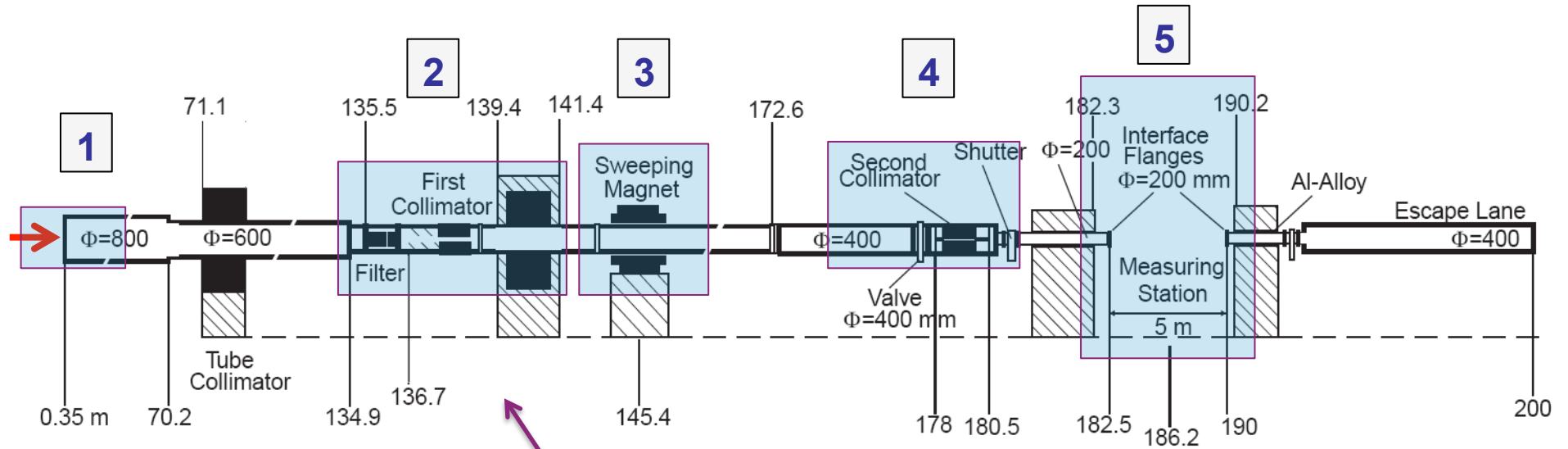
# Re-commissioning of n\_TOF EAR1

Frank Gunsing

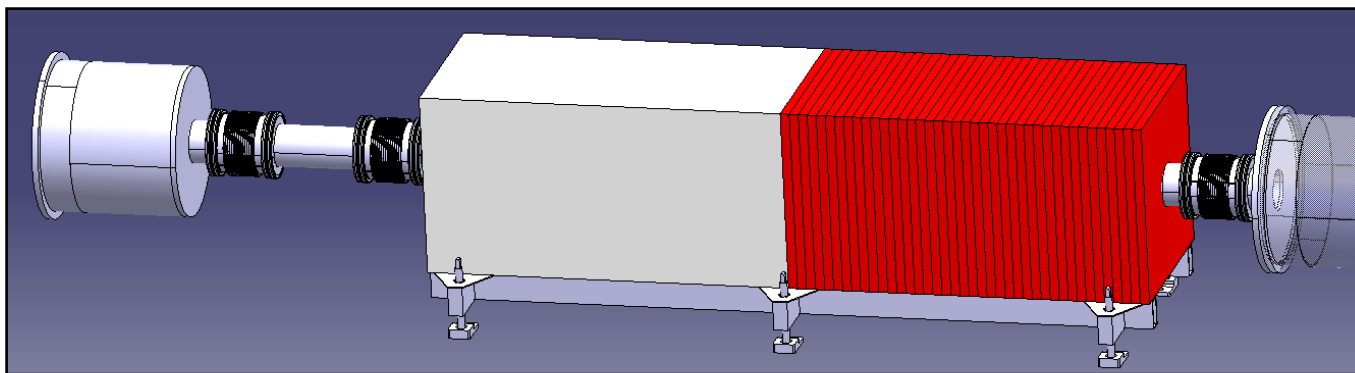
for the n\_TOF Collaboration

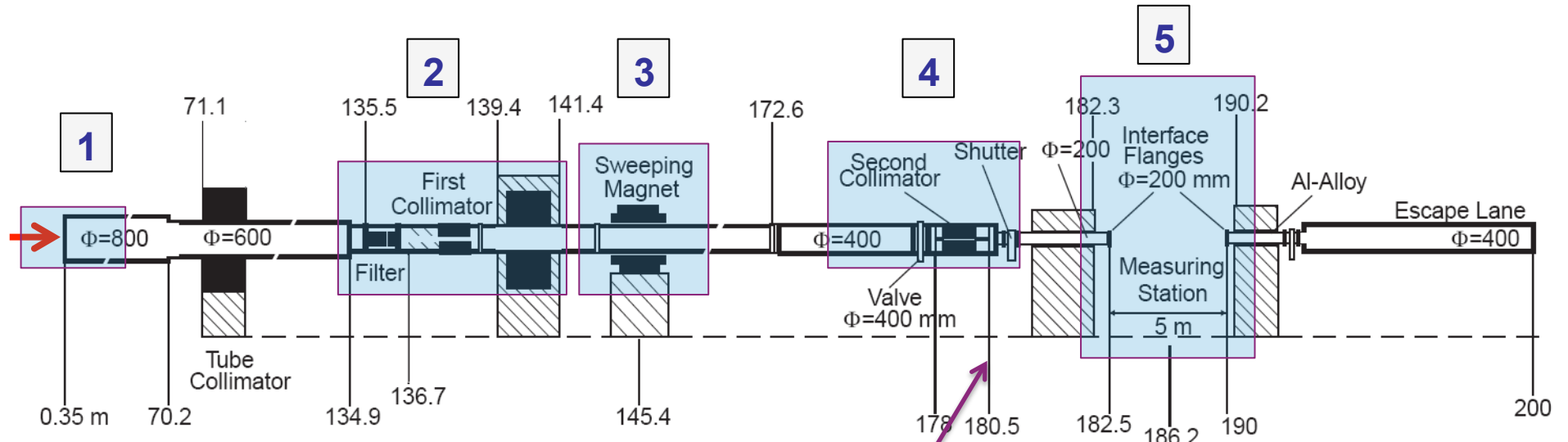
- Modification in beam-line EAR1 needs re-commissioning
  - alignment first collimator
  - vacuum beam pipe configuration in and near EAR1
    - reduced inner diameter of final vacuum tube
    - position of 185-m vacuum window before collimator 2
  - new DAQ units allowing expanded TOF range
  
- In parallel with commissioning EAR2 (CERN-INTC-2013- 043)

# n\_TOF EAR1 beamline

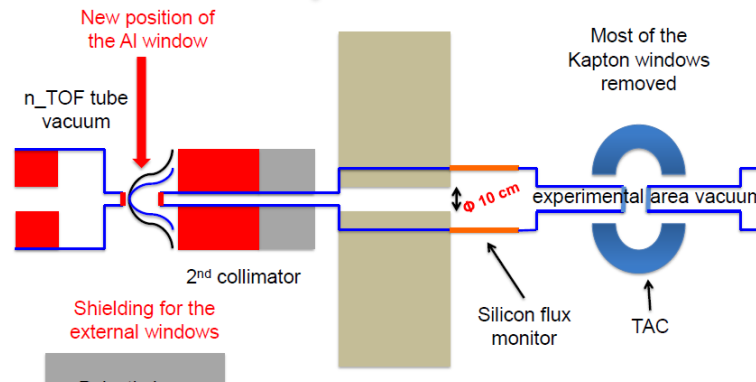


Coll. 1 misaligned by 1.9 cm H, 0.75 cm





- position Al vacuum window
- reduction vacuum pipe and valve



## Re-commissioning goals

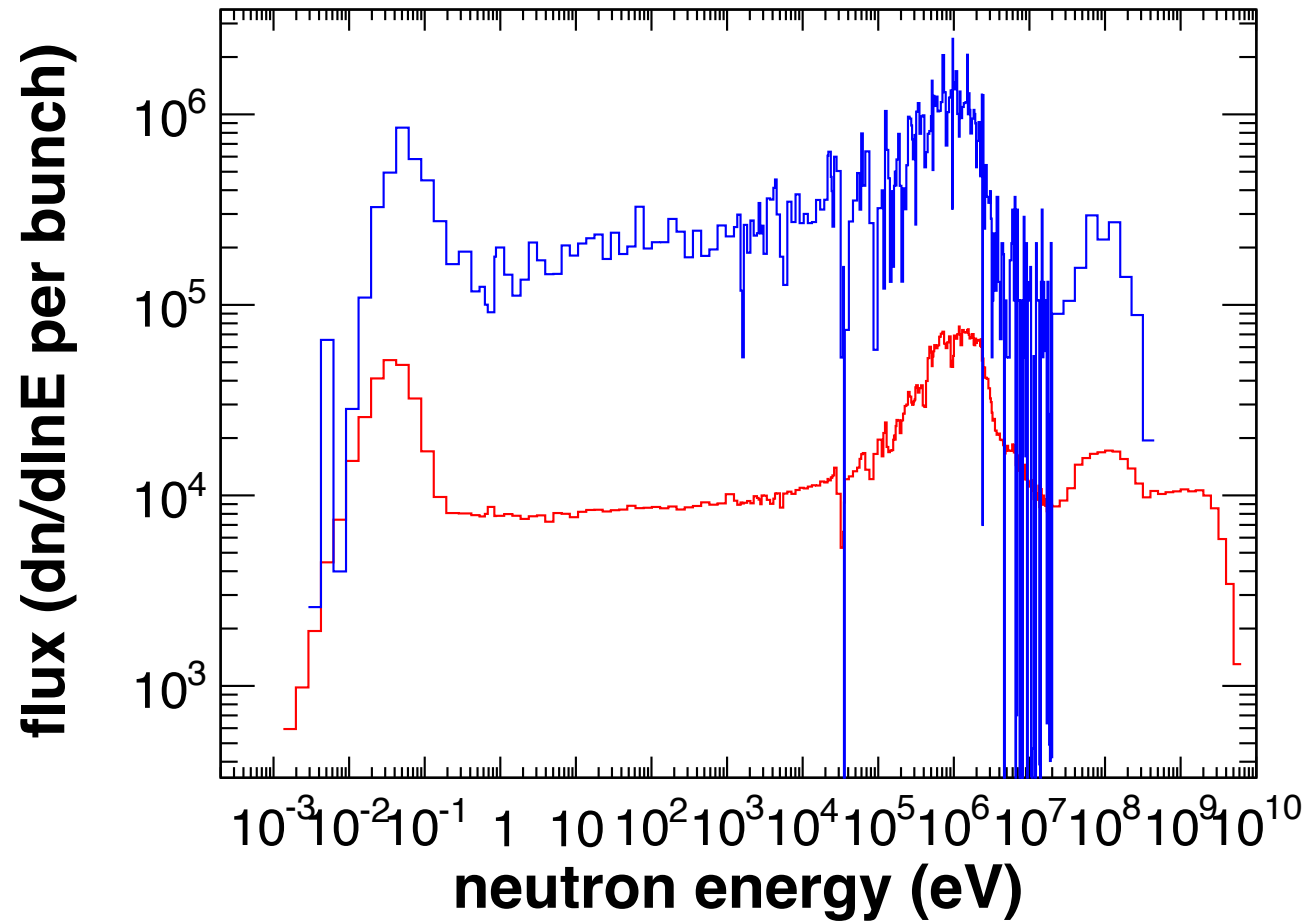
1. Determine neutron flux
2. Determine beam profile
3. Determine resolution function and TOF- $E_n$  calibration
4. Determine backgrounds on TAC
5. Determine response of detectors

## Neutron flux measurements

- New SiMon ( ${}^6\text{Li}$ )
- New MGAS ( ${}^{235}\text{U}$ ,  ${}^{10}\text{B}$ ,  ${}^6\text{Li}$ )
- PTB ( ${}^{235}\text{U}$ )

**$8 \times 10^{17}$  protons**

# Neutron flux



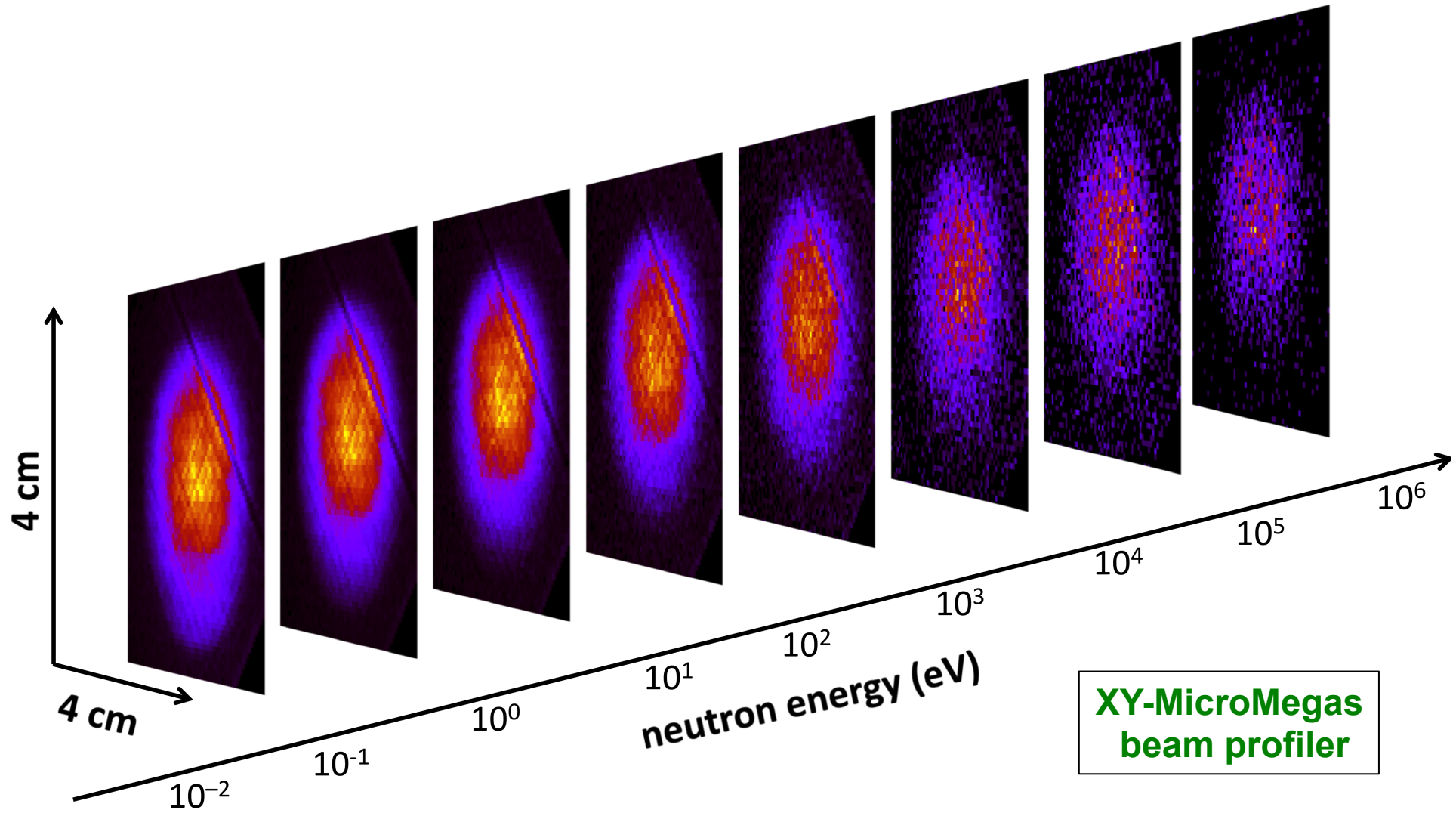
## Beam profile measurements

- New transparent XY-MGAS
- New SiMon with  ${}^6\text{Li}$  inside strip-sandwich (dedicated beam)

**$6 \times 10^{17}$  protons**



# Beam profile

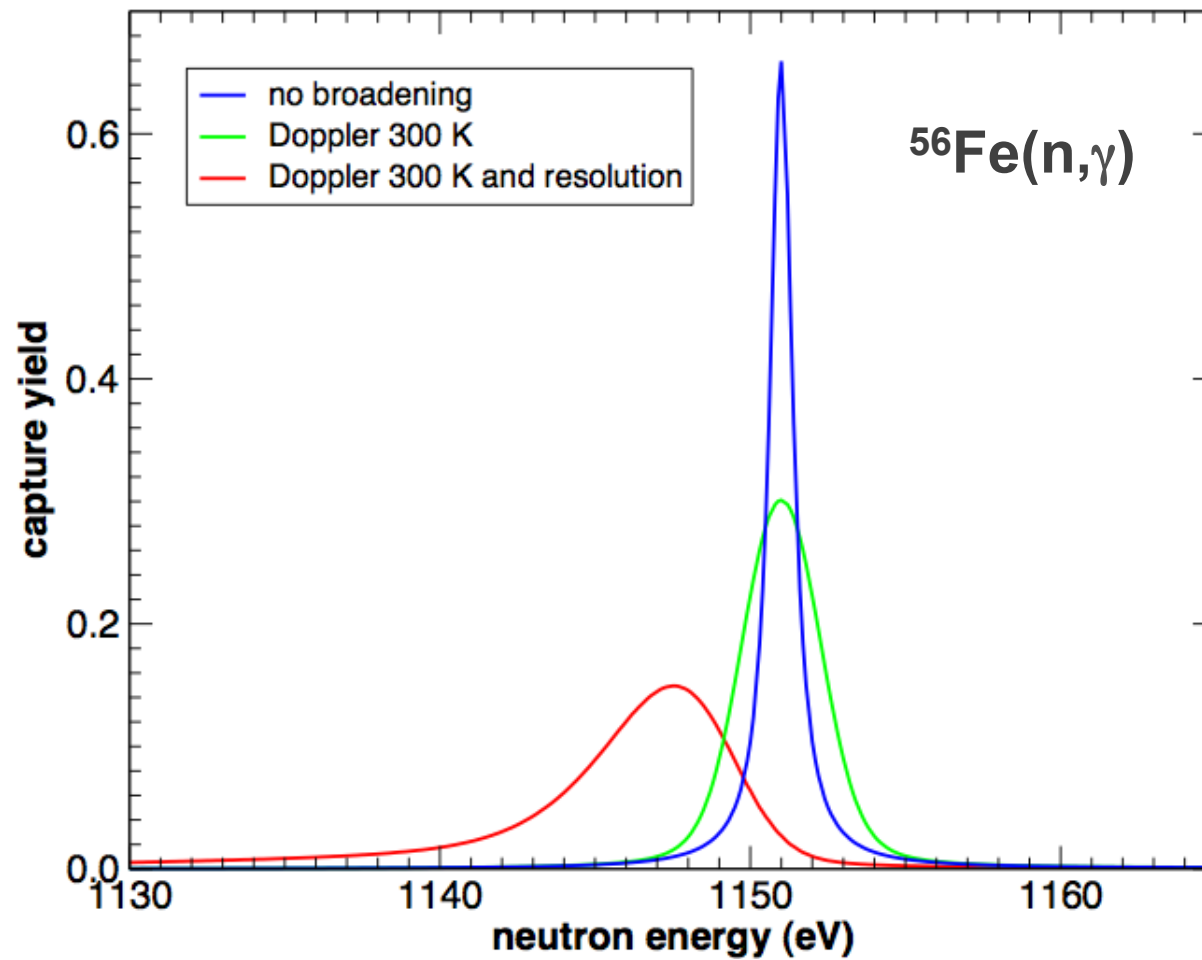


## Resolution function

- $C_6D_6$  with  $^{56}Fe$

**$12 \times 10^{17}$  protons**

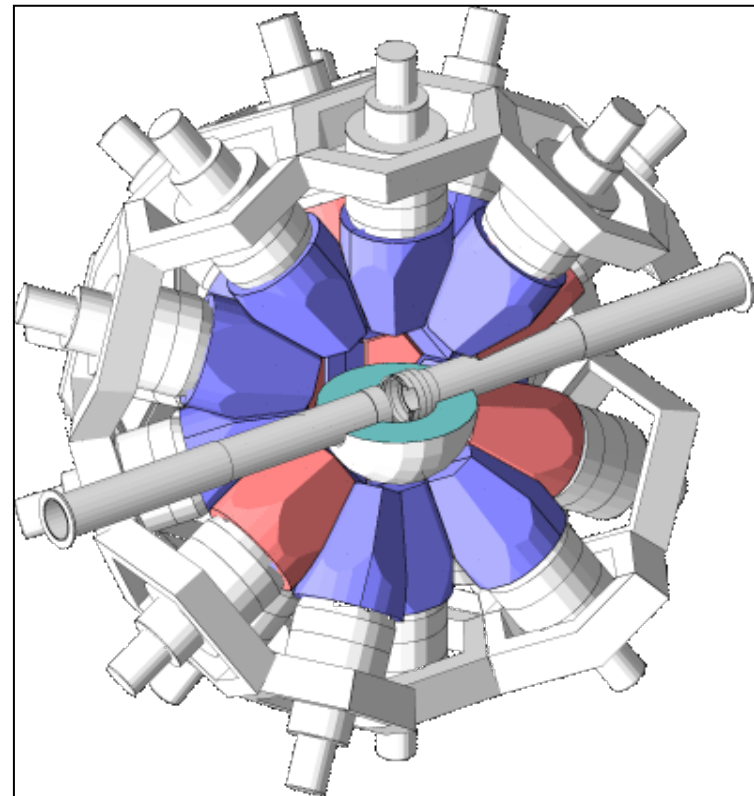
# Resolution function



## BaF<sub>2</sub> Total Absorption Calorimeter (TAC)

- gated photo-multipliers
- measure background in various conditions
- response to gamma-flash

**$4 \times 10^{17}$  protons**



## Detector response functions

- $C_6D_6$  (all types)
- $LaBr_3/LaCl_3$
- $BaF_2$
- (n,cp) detectors
- HPGe
- CsI, others

**$5 \times 10^{17}$  protons**

## Summary, preliminary proton request

	x1e17 protons
1. Neutron flux	8
2. Beam profile	6
3. Resolution function	12
4. Backgrounds on TAC	4
5. Detectors tests	5
6. Unforeseen	4
<b>total</b>	<b>39</b>

Thank you for your attention

# Commissioning time schedule

