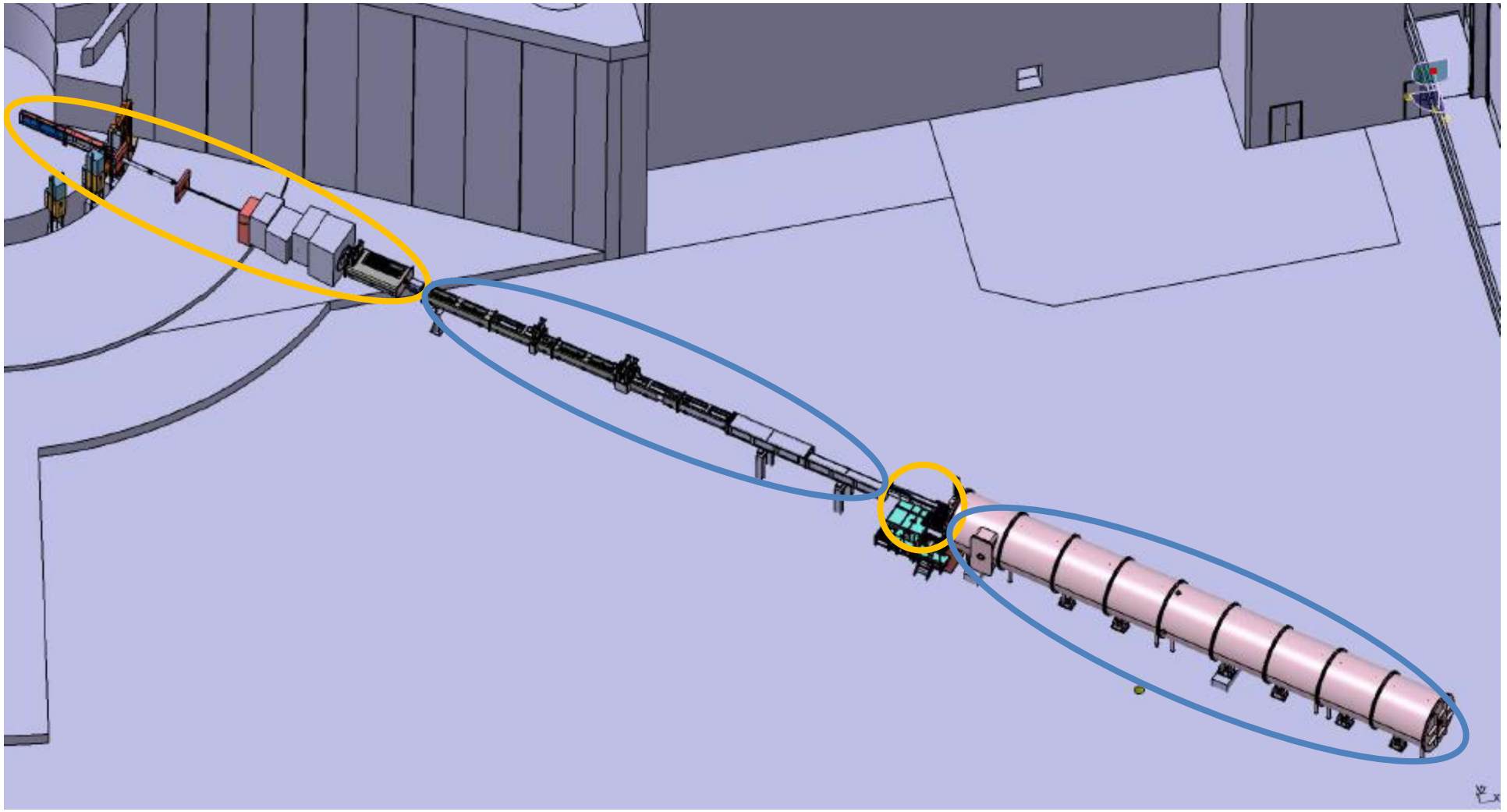
SKADI

Small K-Angle Diffractometer

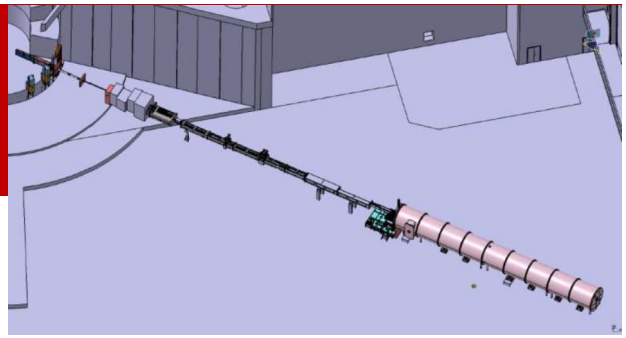
Implantation – Hall Est – Port 3

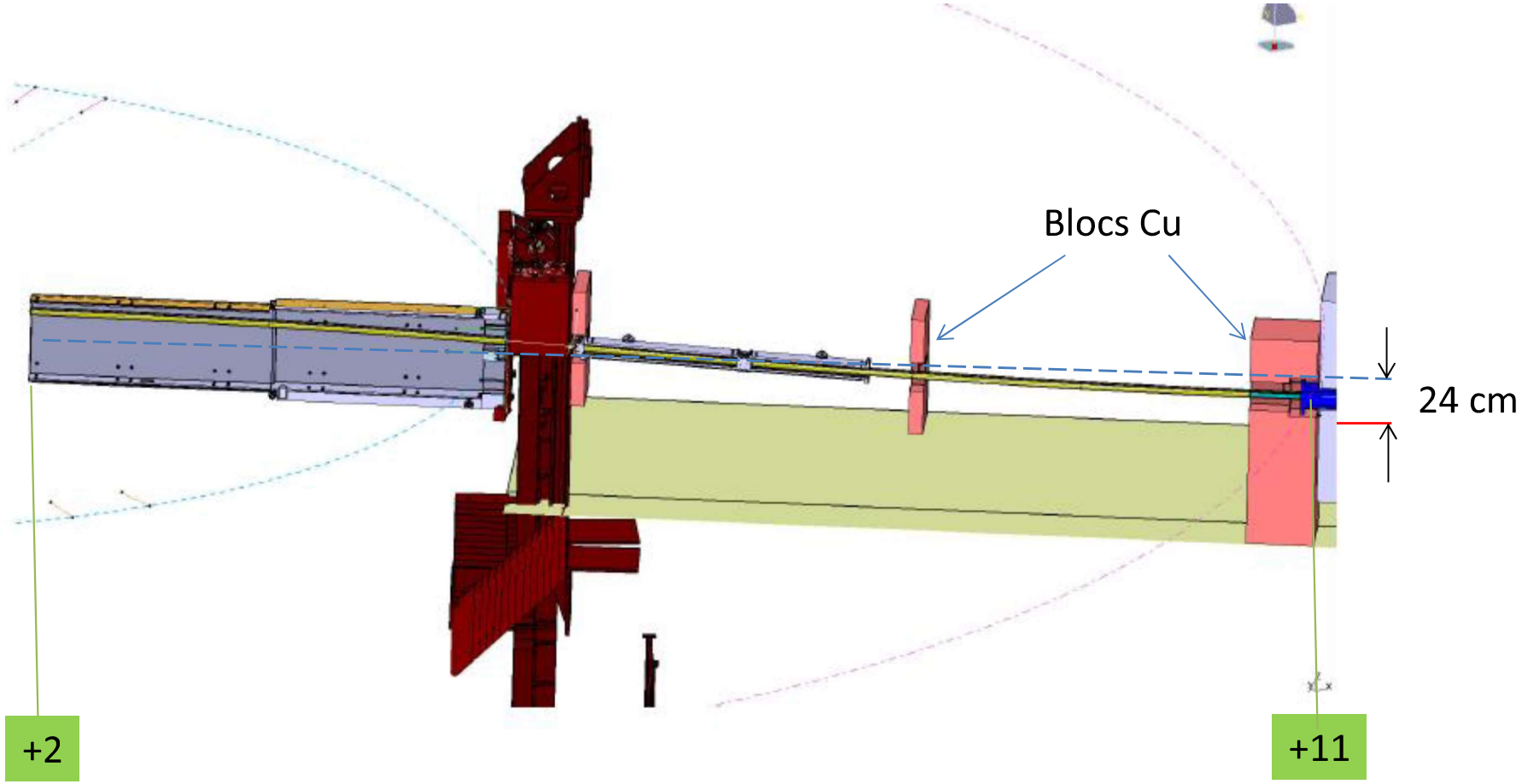
Instrument: 60 m

50/50 LLB / JCNS



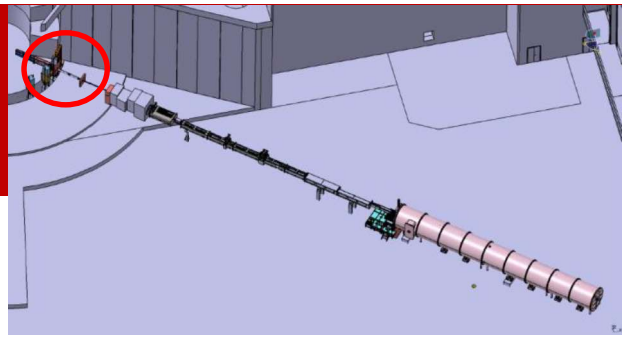
Déviateur vertical en S





→ Pas de vision directe du modérateur

Déviateur vertical en S



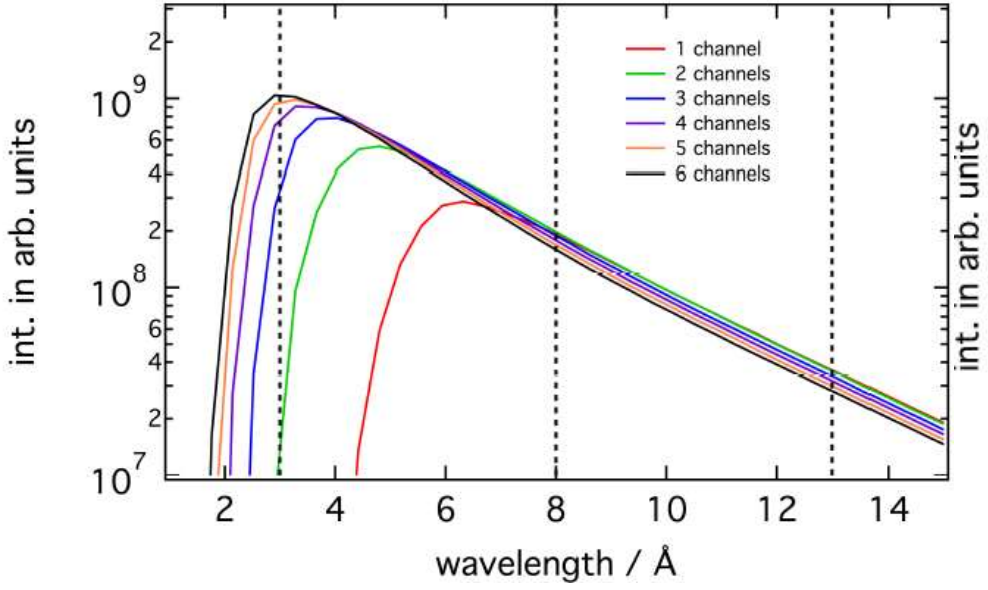
Guides 30 x 30 mm^2

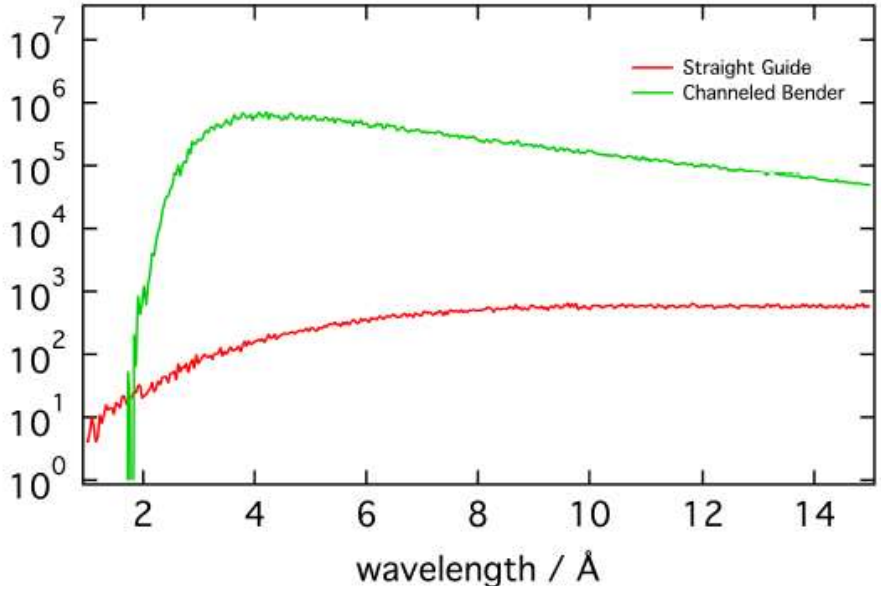
L=9 m, R=84 m

m=3, substrat Al

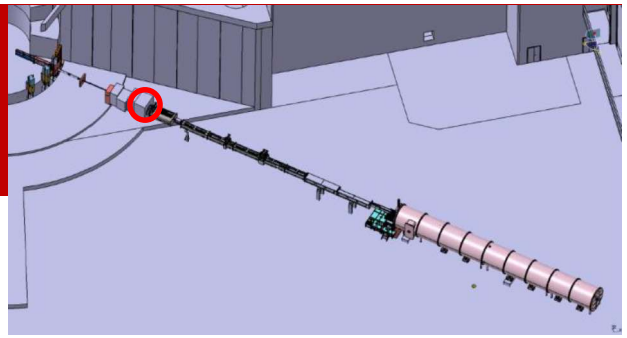
5 canaux

Sous vide

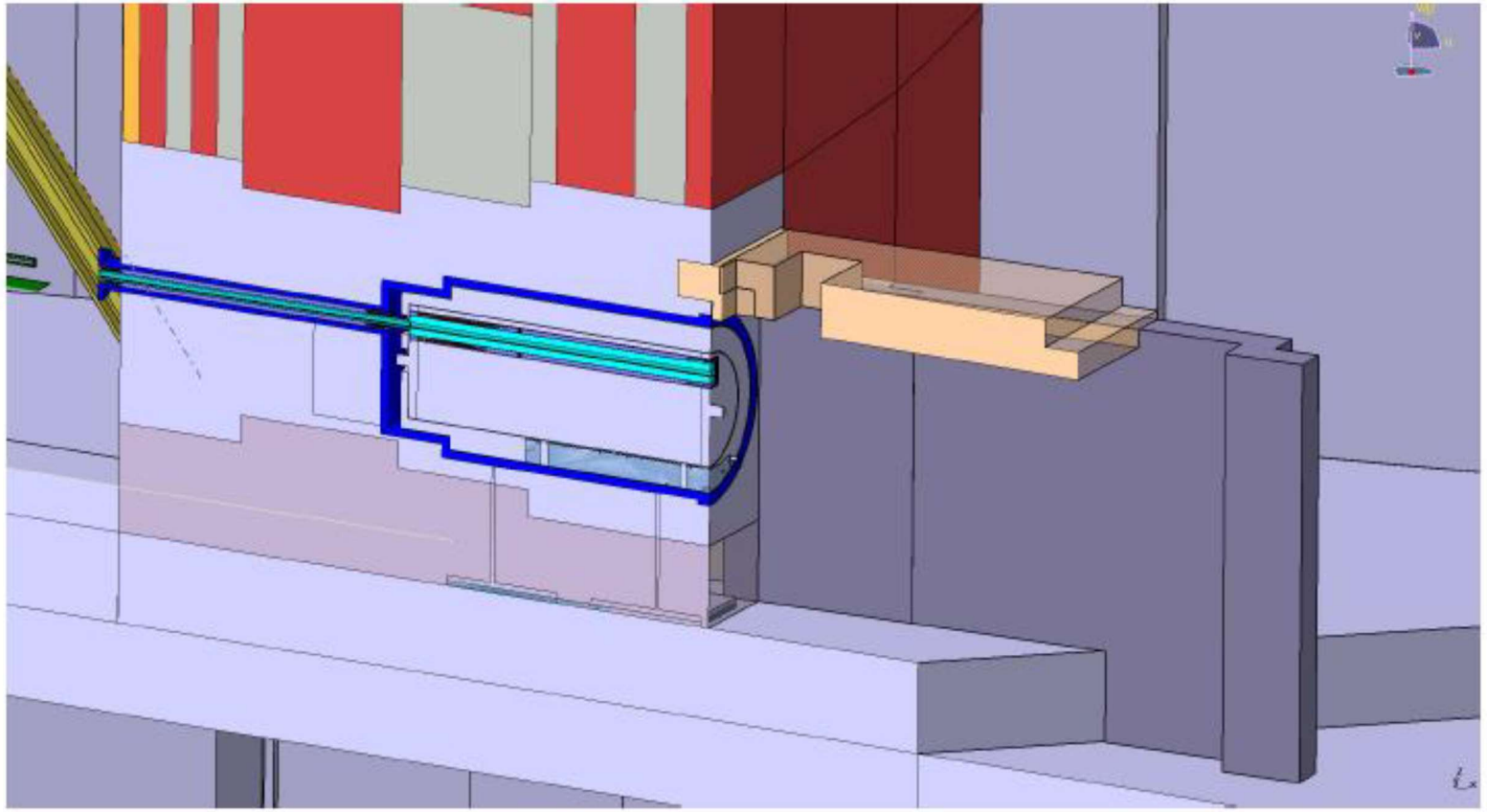




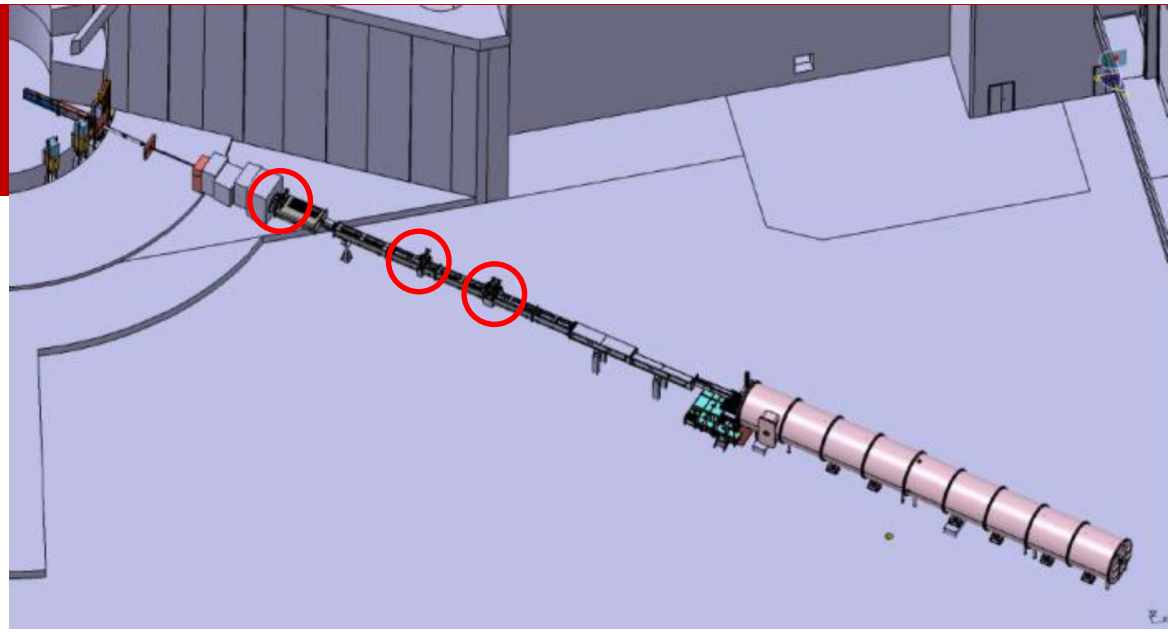
Obturateur lourd



Motorisation en-dehors du bunker
Mode « fail-safe »



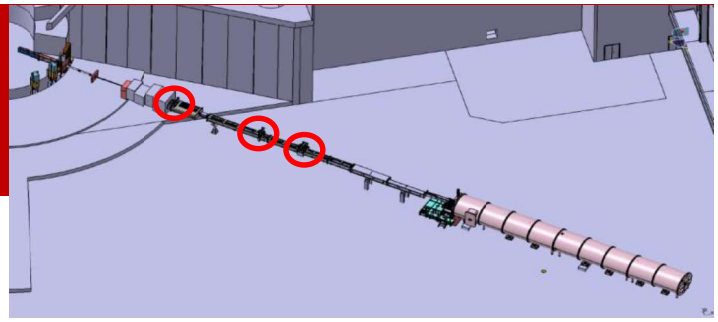
Choppers



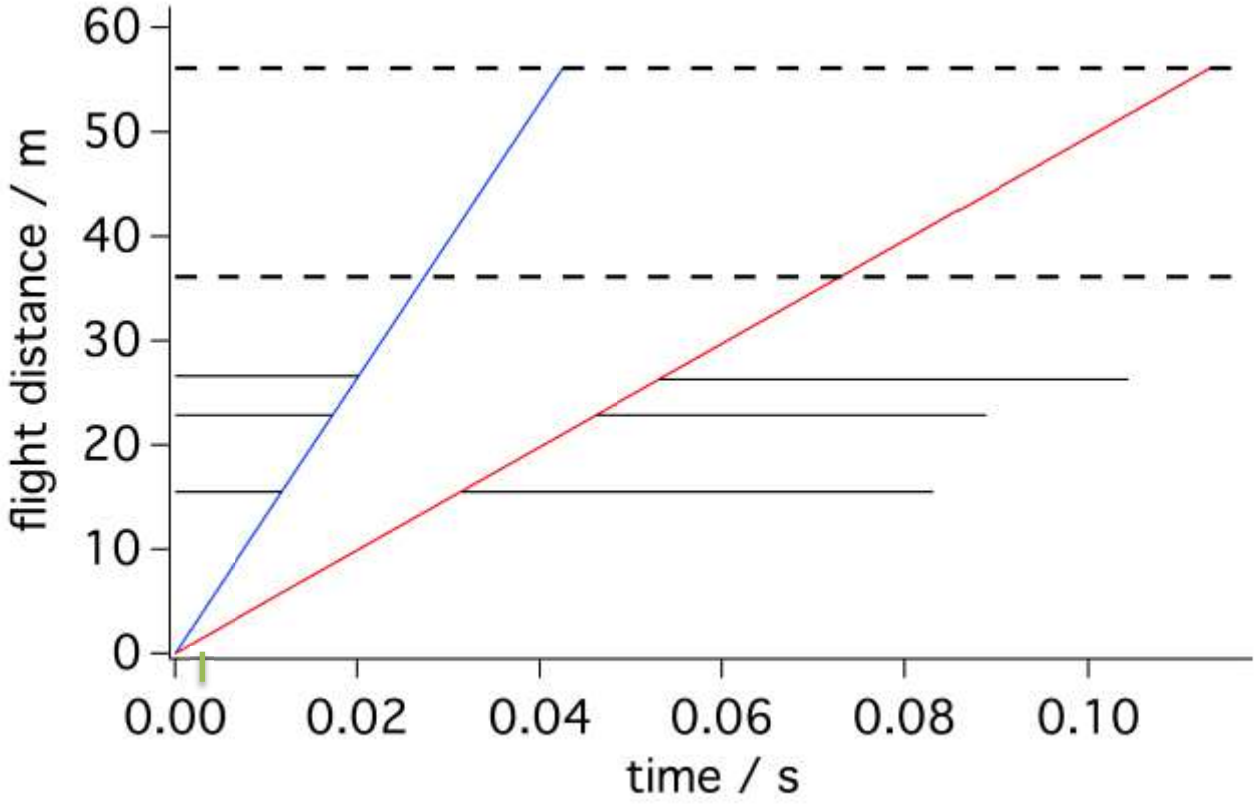
4 choppers
Ø 60 cm
Paliers magnétiques

Description	Chopper position from source /m	Frequency / Hz	Opening time /s	Opening in degree
Frame Overlap	15.5	14	0.01957	98.64
Higher Order suppression	22.85	14	0.02885	145.41
High Res 1	26.3	N x 14	0.03321/Nx14	167.37
High Res 2	26.6	N x 14	0.03359/Nx14	169.27

Choppers

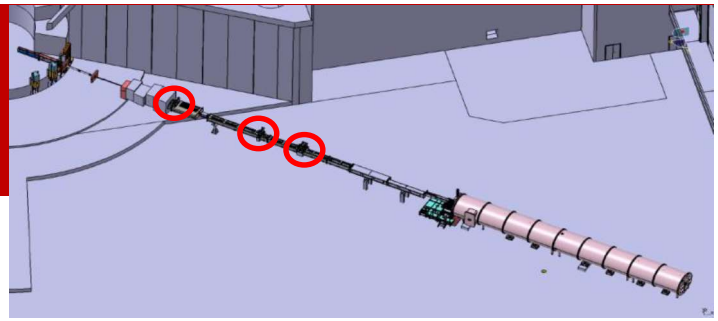


1- Mode basique

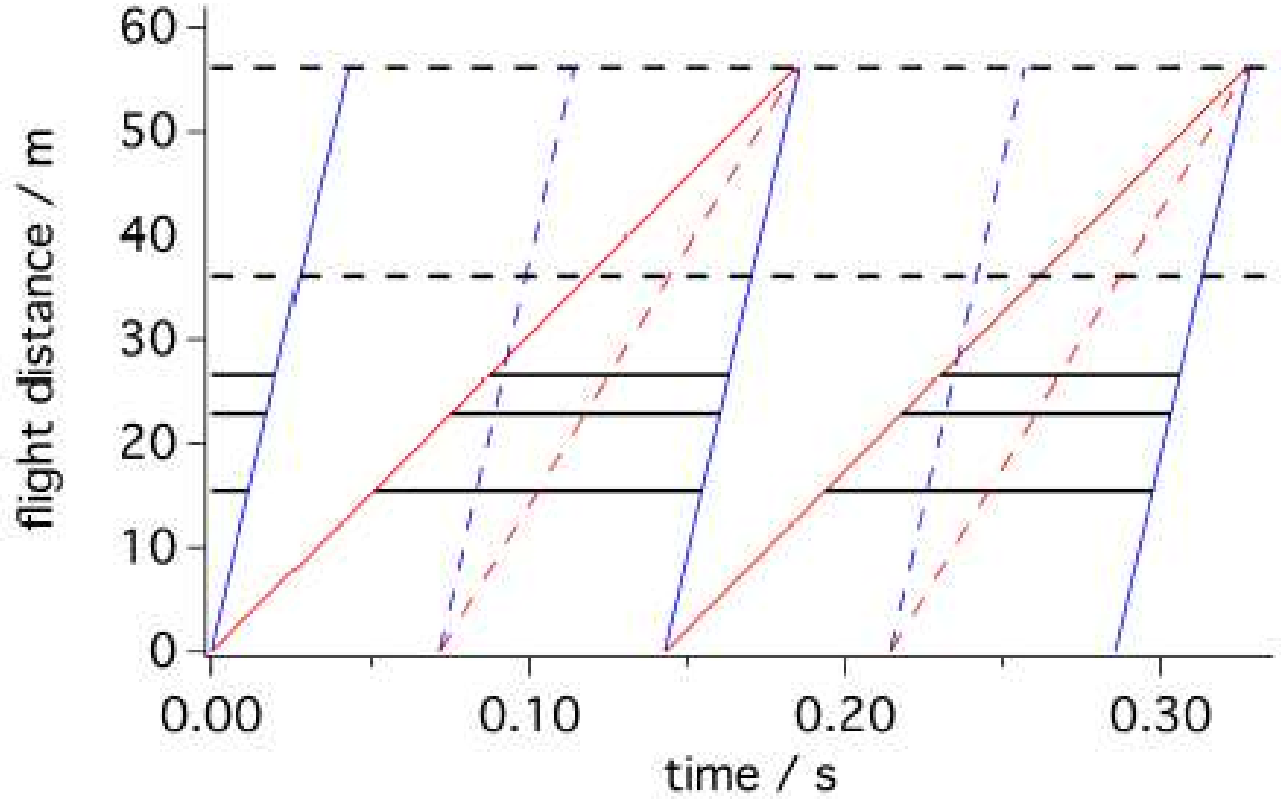


→ Gamme 3 à 8 Å

Choppers

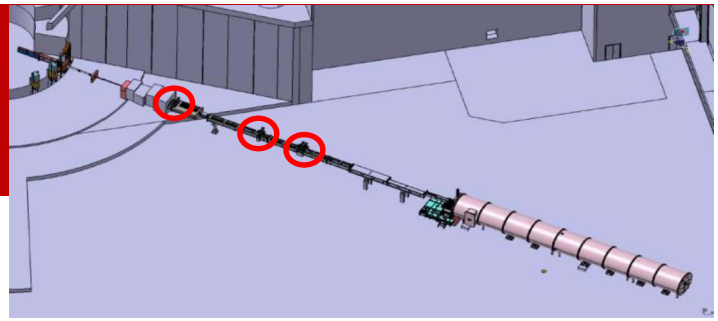


2- Mode étendu

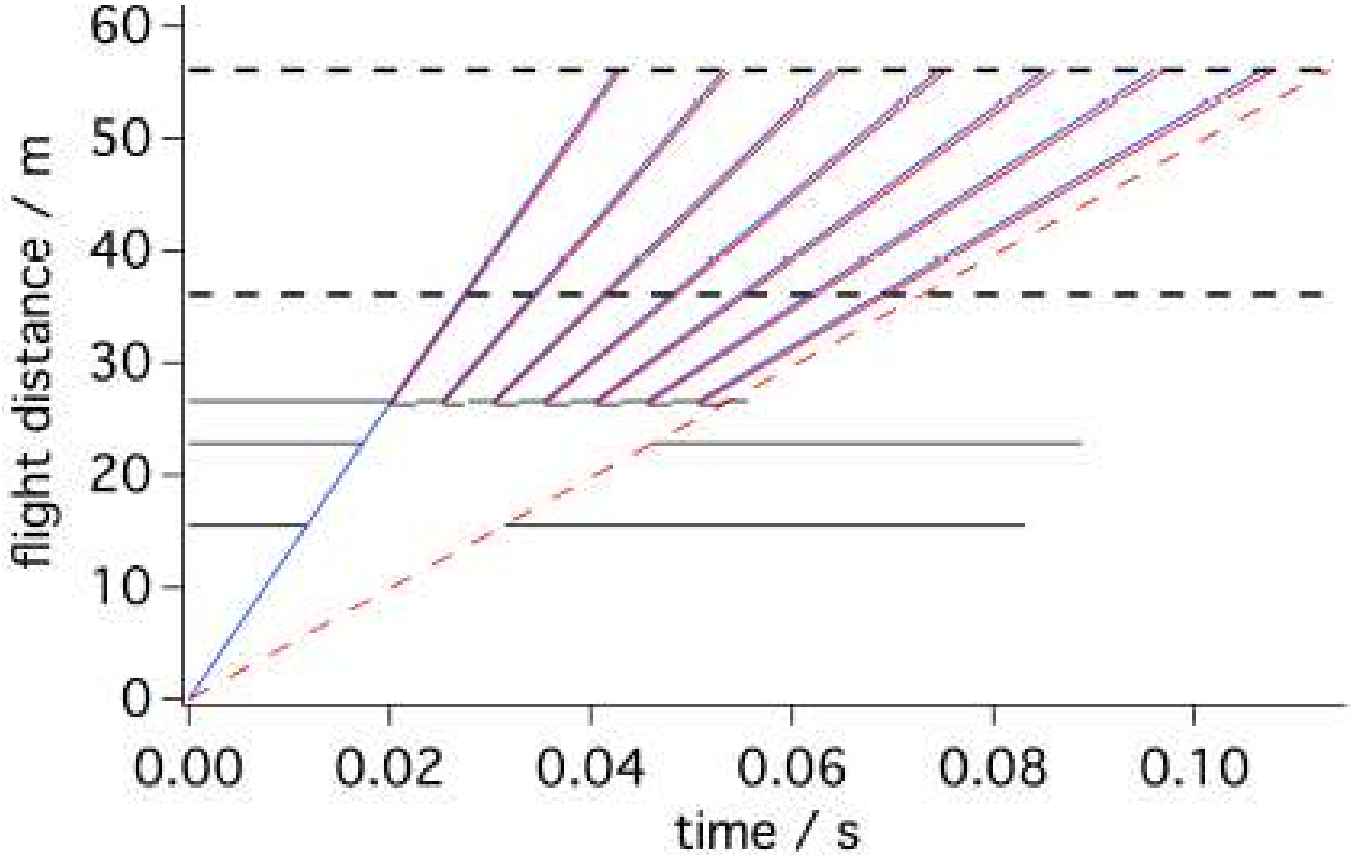


→ Gamme 3 à 13 Å

Choppers

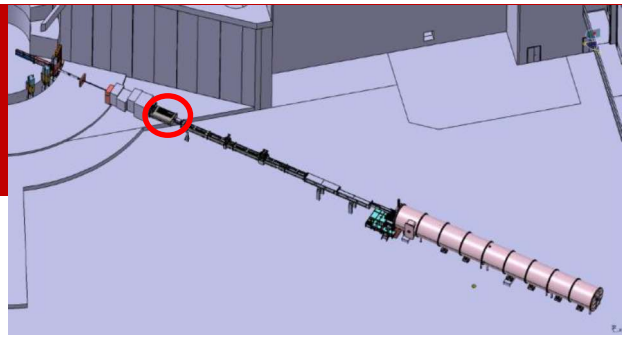


3- Mode haute résolution

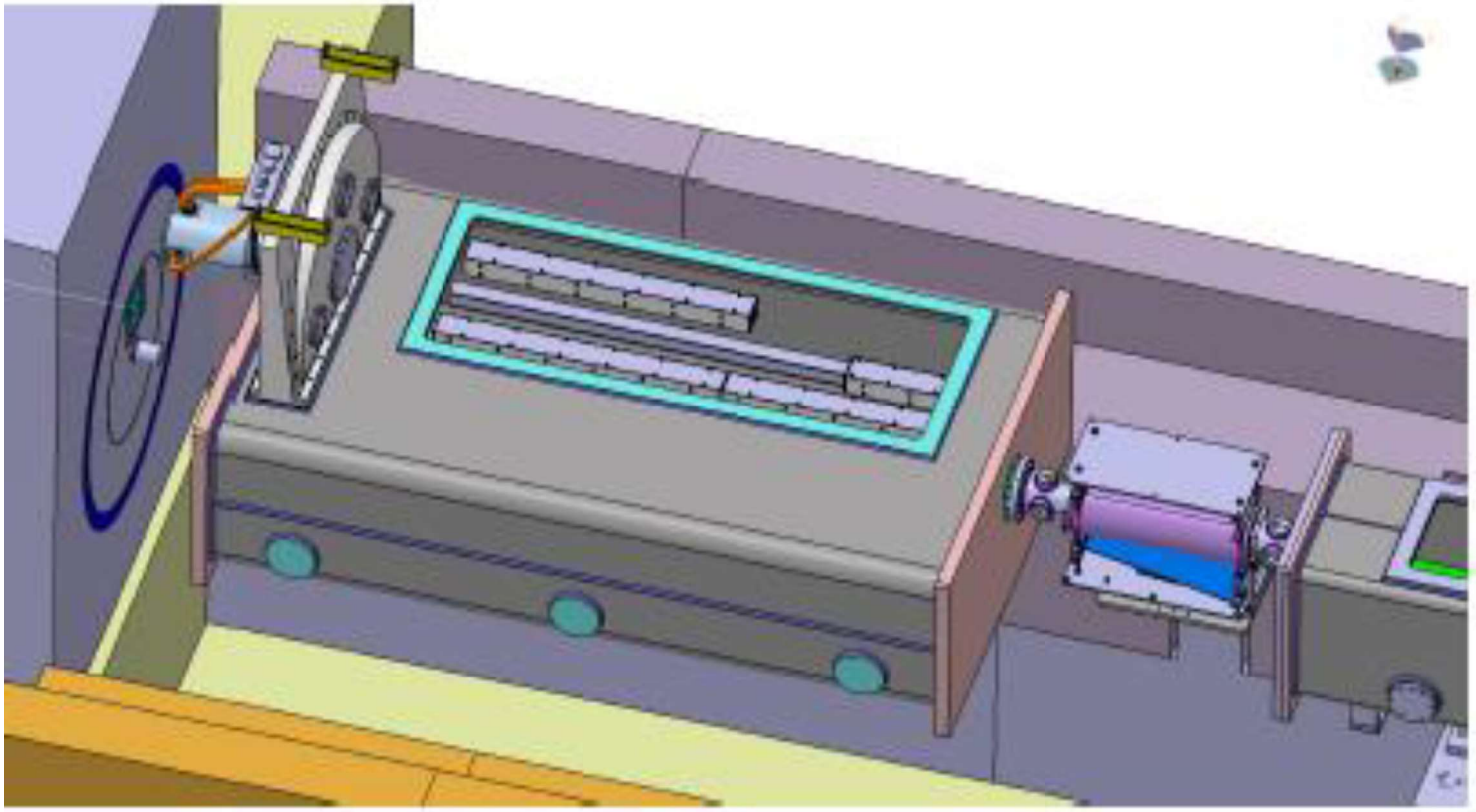


→ $\Delta\lambda/\lambda$ = 1%

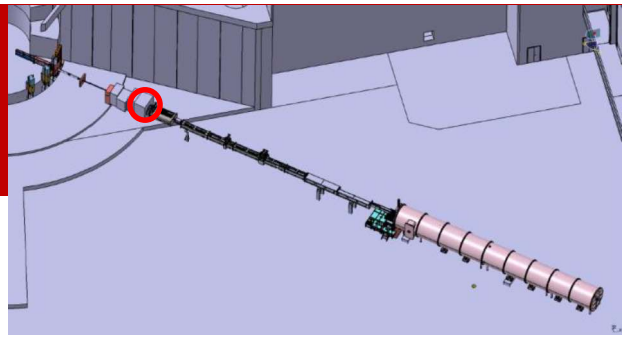
Polariseur



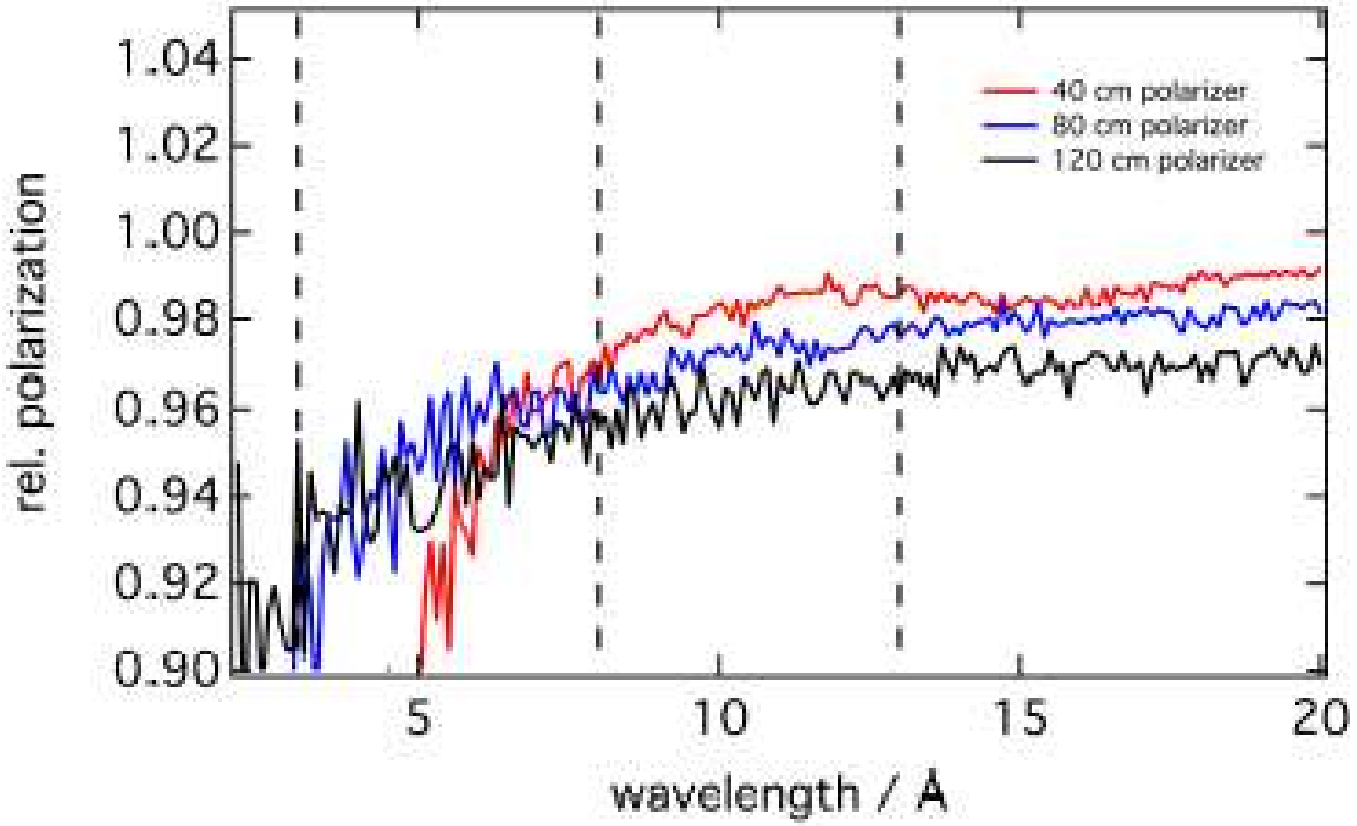
2 SM en transmission (40 et 80 cm)
1 guide (mode non polarisé)
1 voie libre



Polariseur

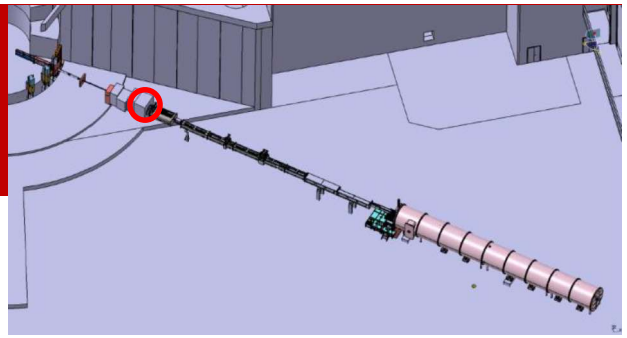


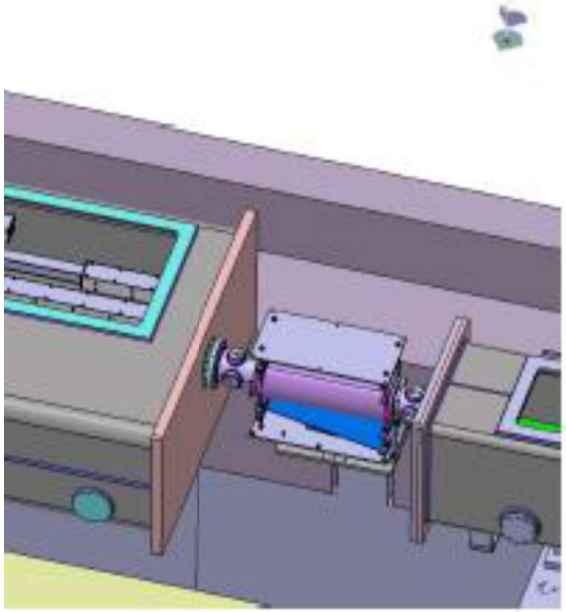
m=3, simple revêtement

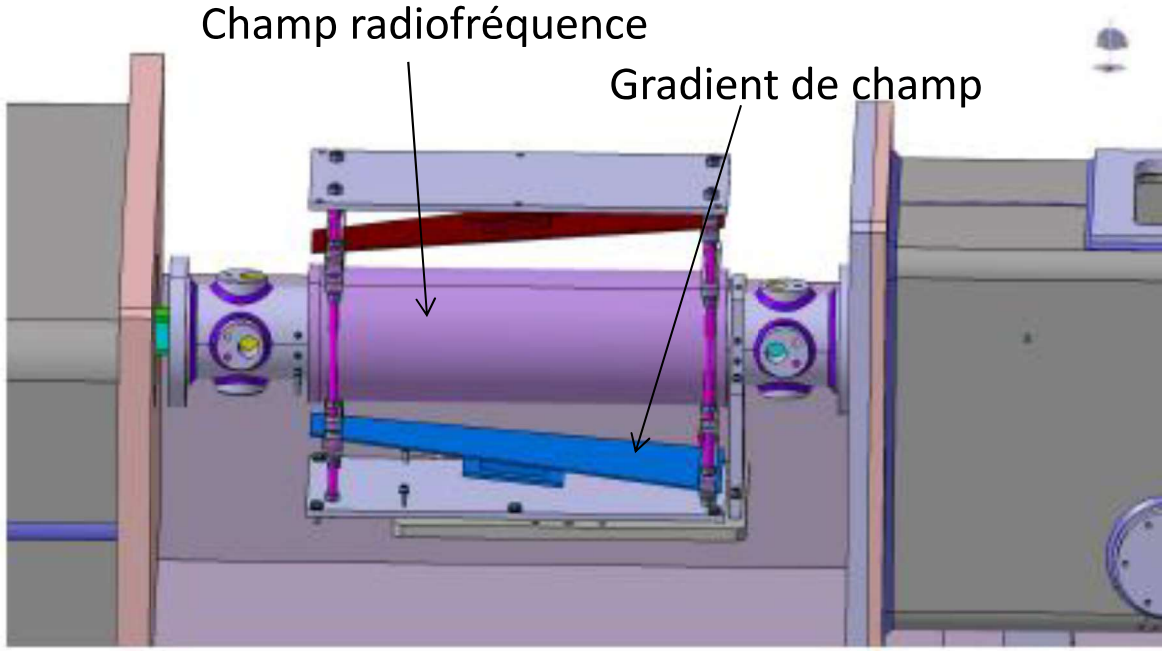


→ 2 combinaisons: 3+ et 8+ Å

Spin-flipper

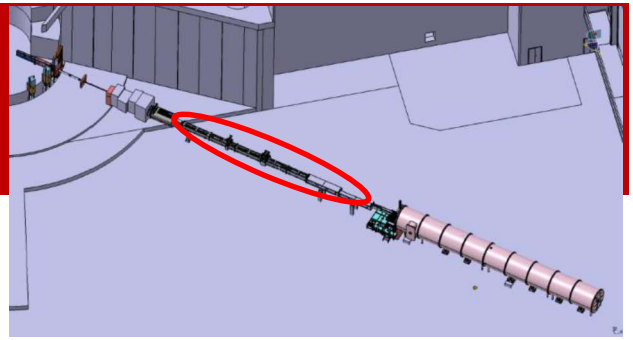






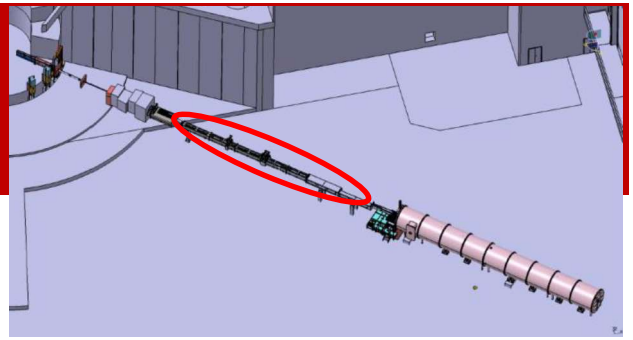
→ Pas d'élément dans le faisceau
→ Pas de refroidissement (bobinage à l'air)
→ Pas de fenêtre

Collimateur

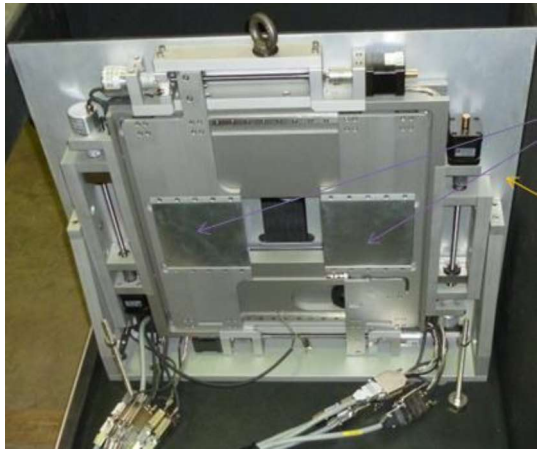


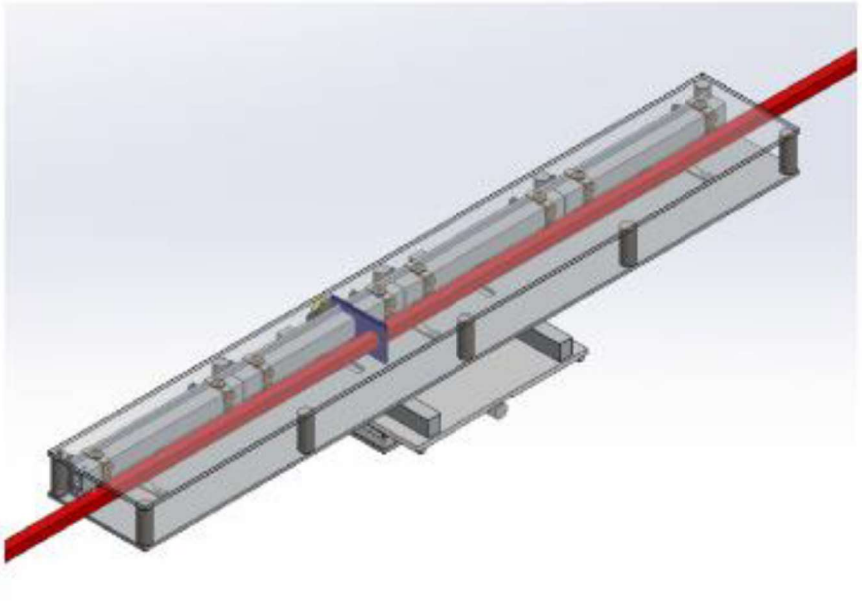
Longueur 20 m sous vide
3 configurations: 8, 14 et 20 m
Option VSANS
Nez rétractable 1m -0/+1m
Interfaces choppers

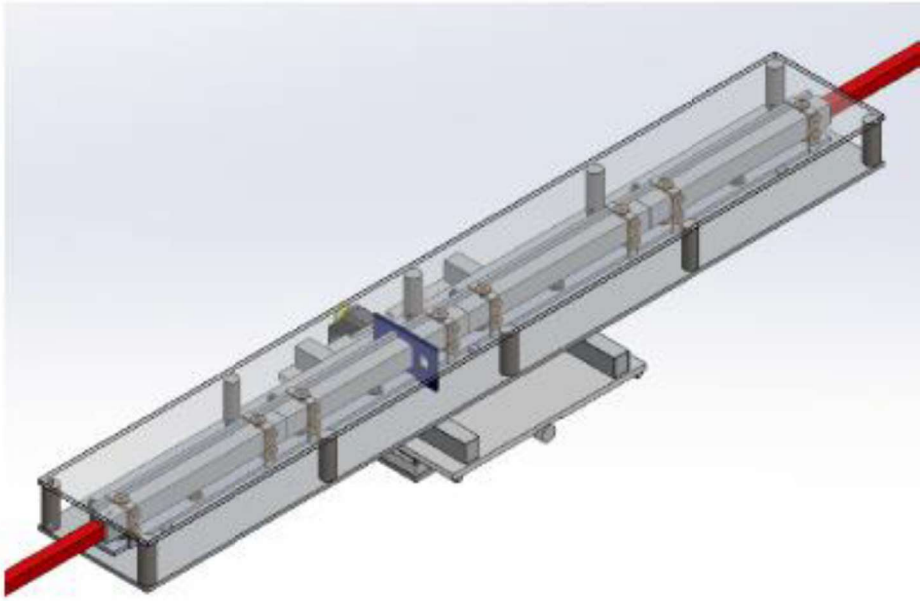
Collimateur



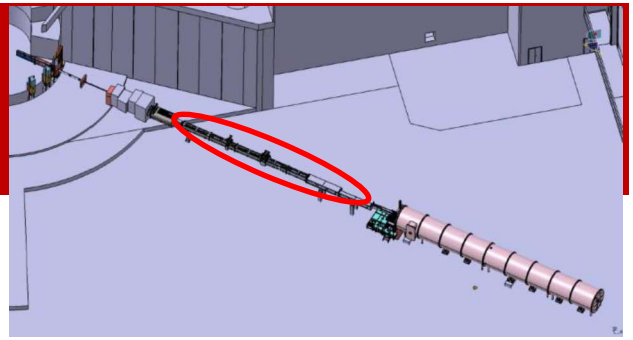
4 fentes motorisées indépendantes
Guides rétractables (2X 6 m)
Absorbants intermédiaires



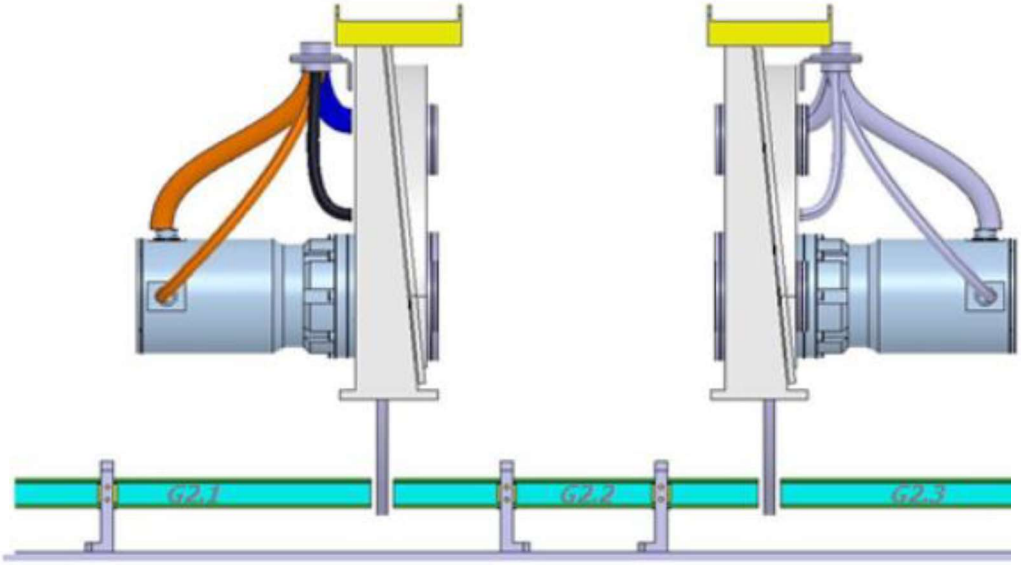


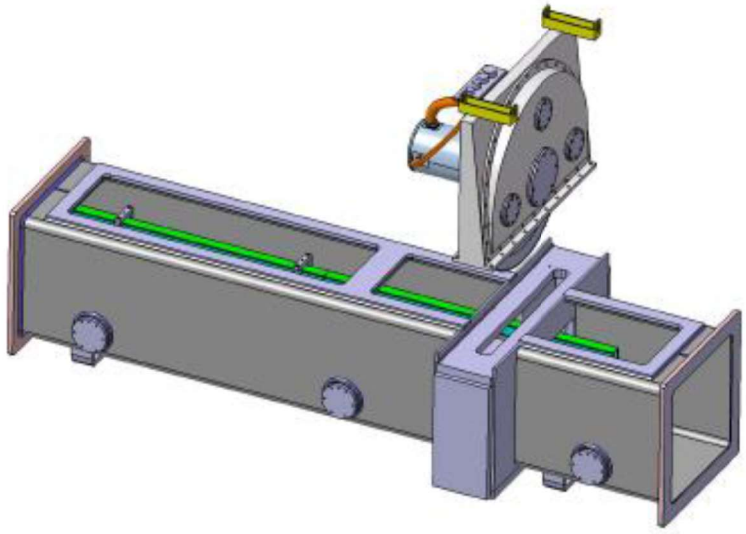


Collimateur

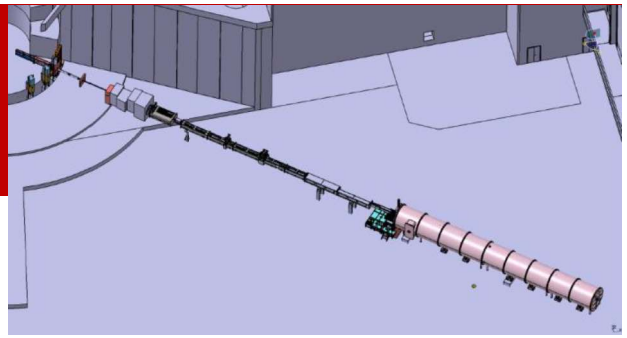


Intégration des choppers





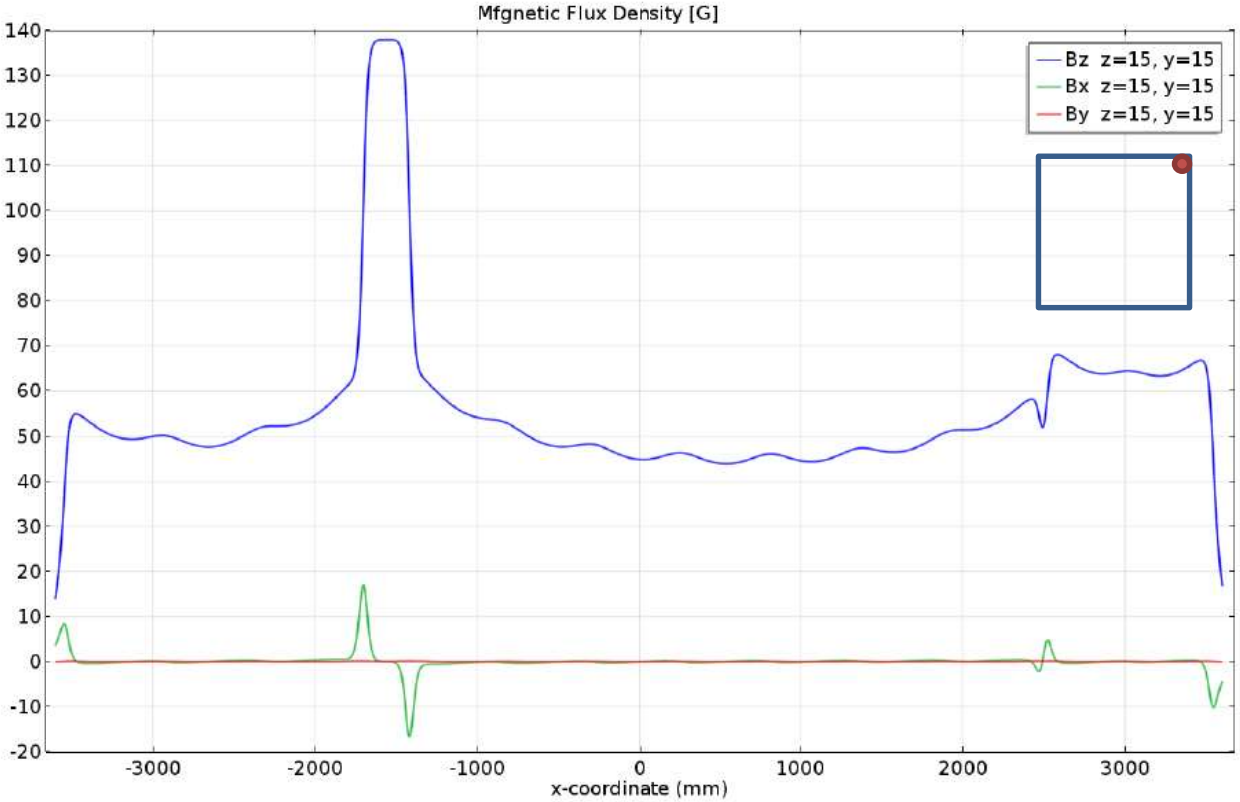
Collimateur



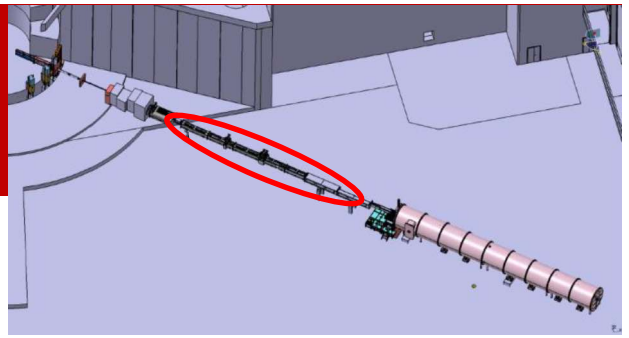
Champ guide, min. 45 G

Fer doux, ép. 10 mm

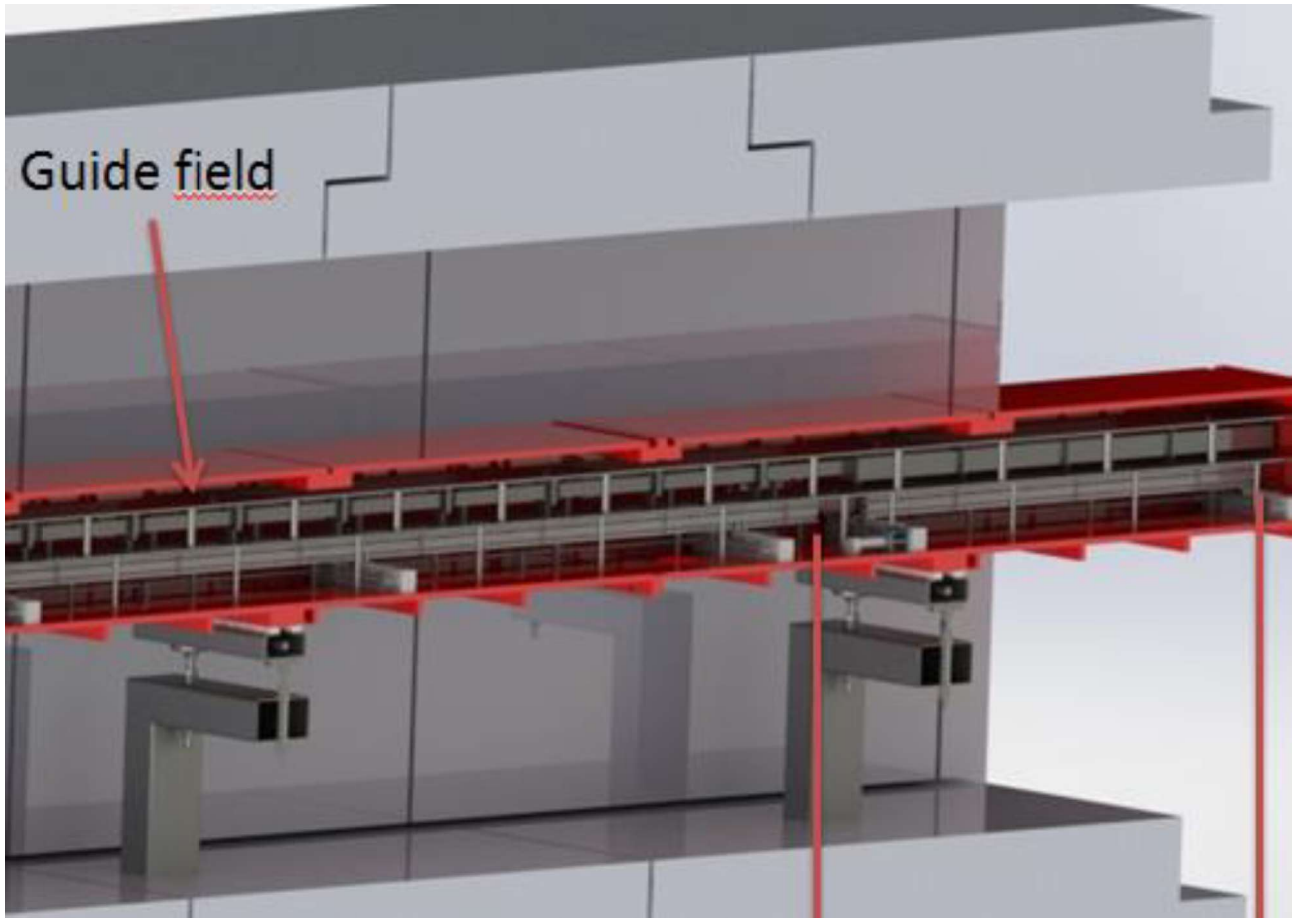
Colonnettes d'aimant



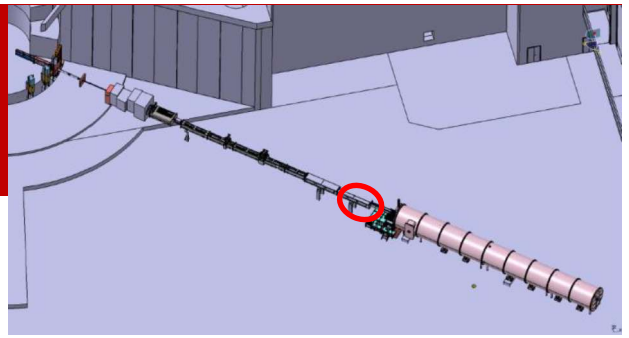
Collimateur



Champ guide

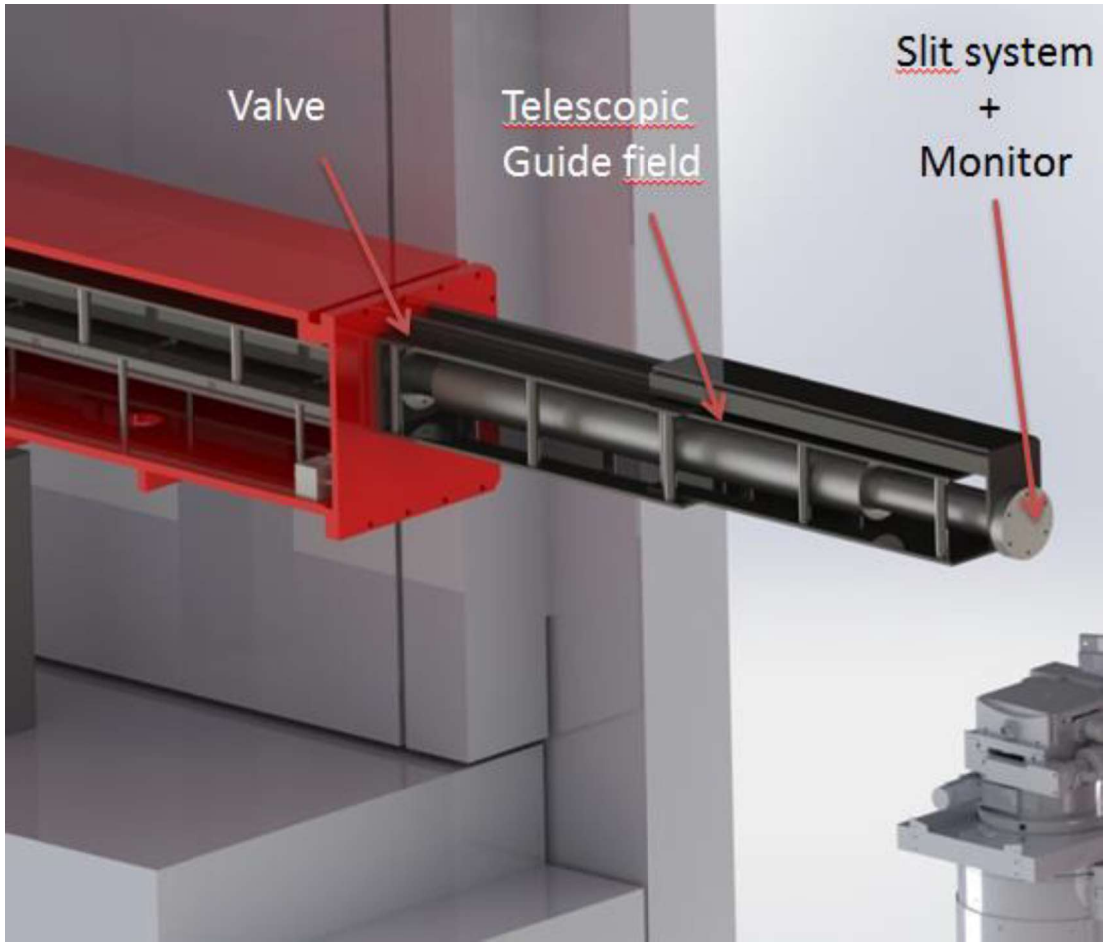


Collimateur

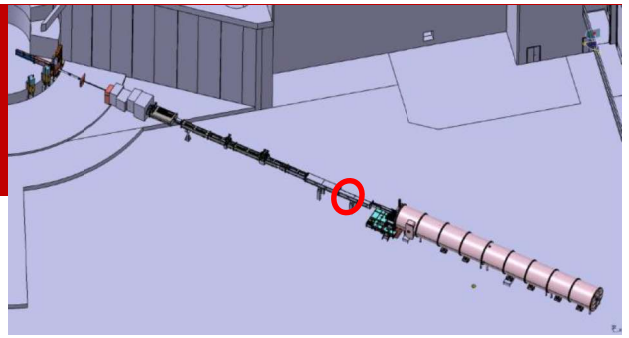


Nez télescopique 1 +1/-0 m

Champ guide télescopique

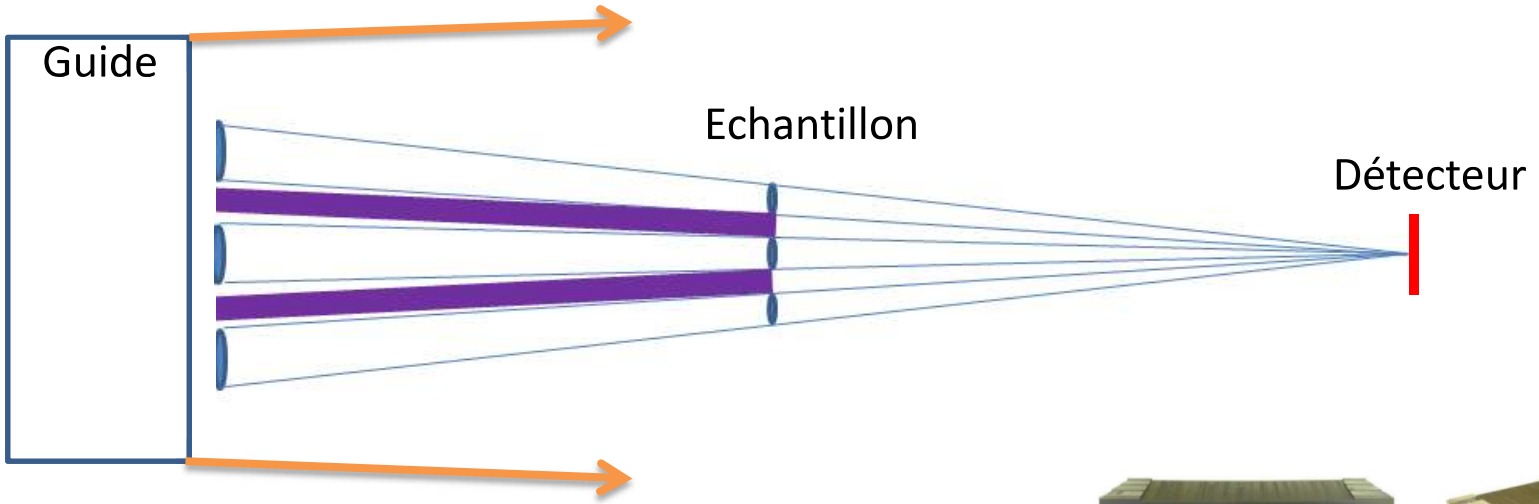


Collimateur - VSANS



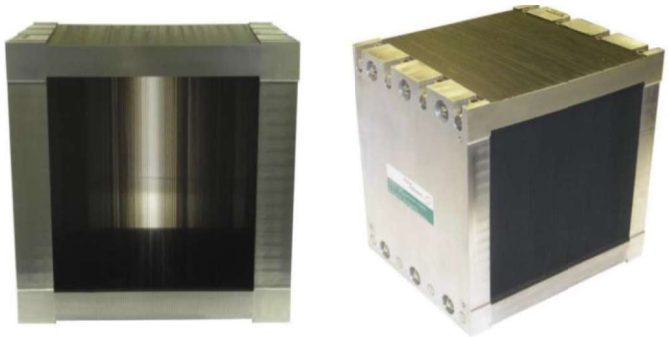
$Q = 10^{-4}$ Å^{-1}

Perte 4 décades en intensité vs $Q = 10^{-3}$ Å^{-1}

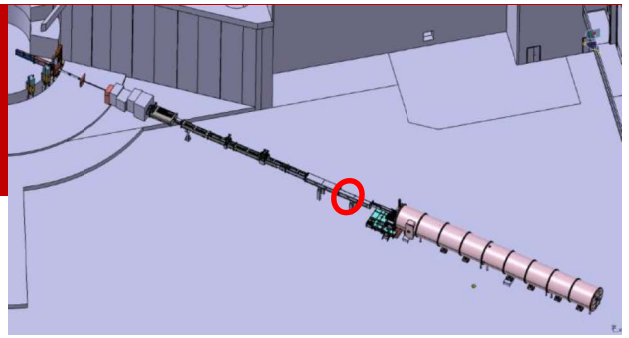


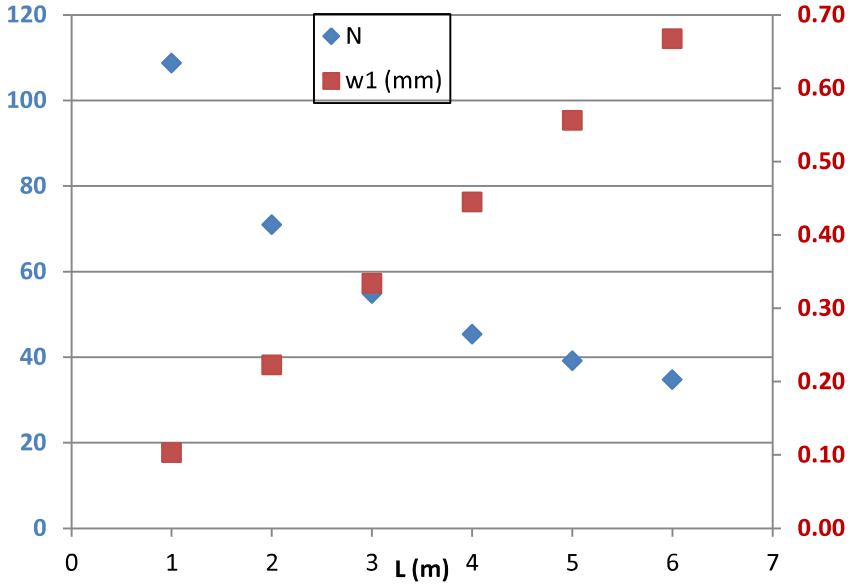
Multi-faisceaux / multi-fentes (X50)

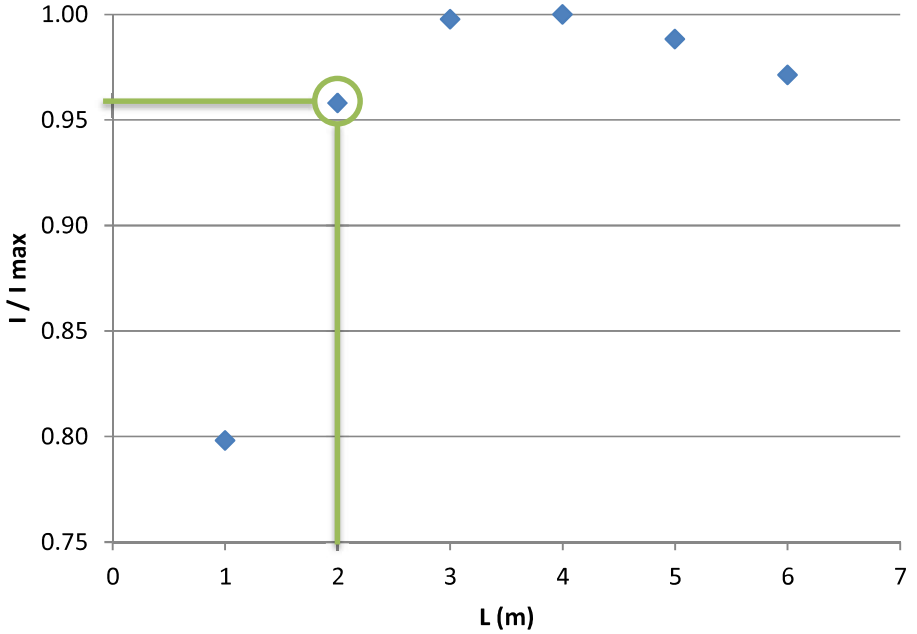
→ Pas de crosstalk



Collimateur - VSANS



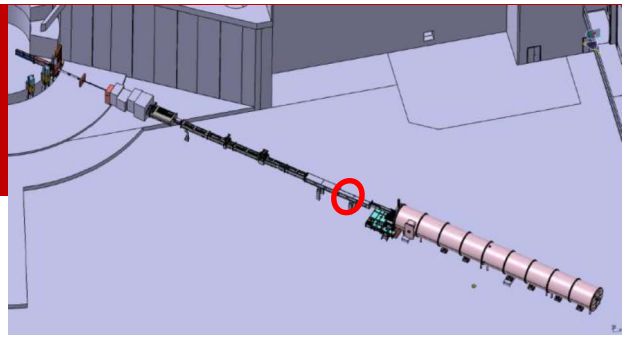




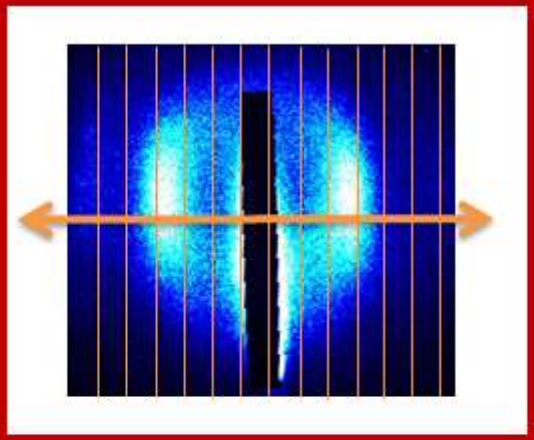
w_1 (mm)	w_2 (mm)	n	t (mm)	Internal entrance (mm)	Internal exit (mm)
0.23	0.21	69	0.1	22.8	21.5

→ 2 m: 4 éléments de 50 cm

Collimateur VSANS

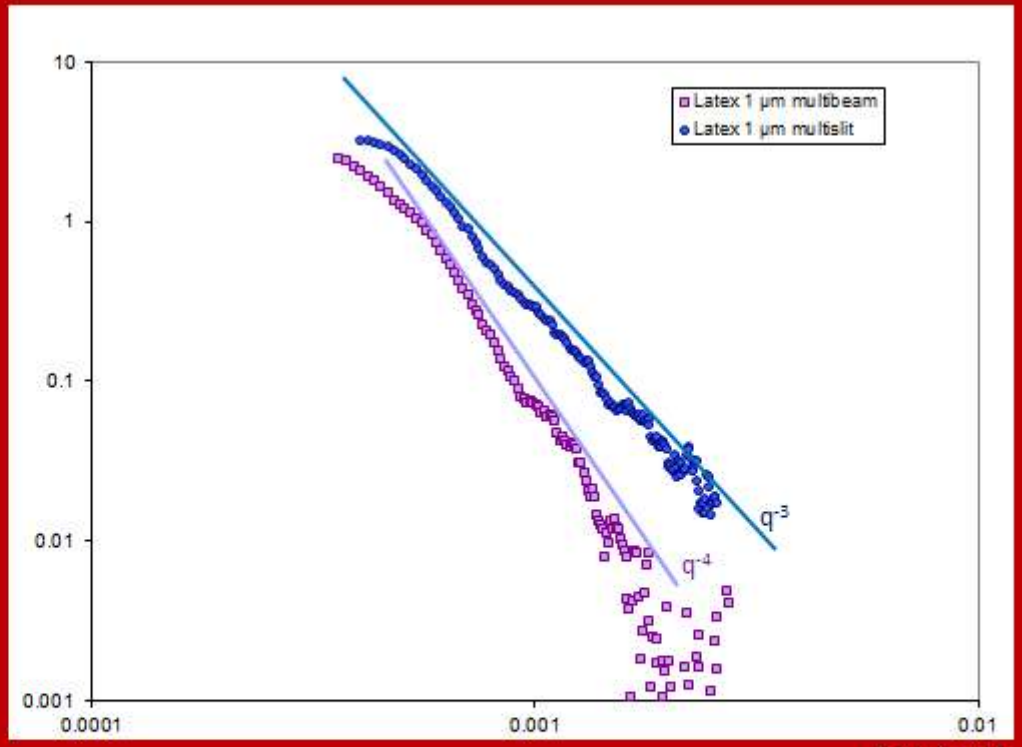


Data reduction & analysis



Data treatment :

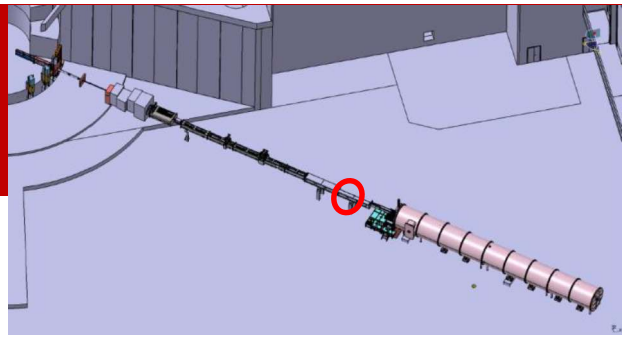
Vertical integration



Change of slope

→ Needs appropriate data treatment

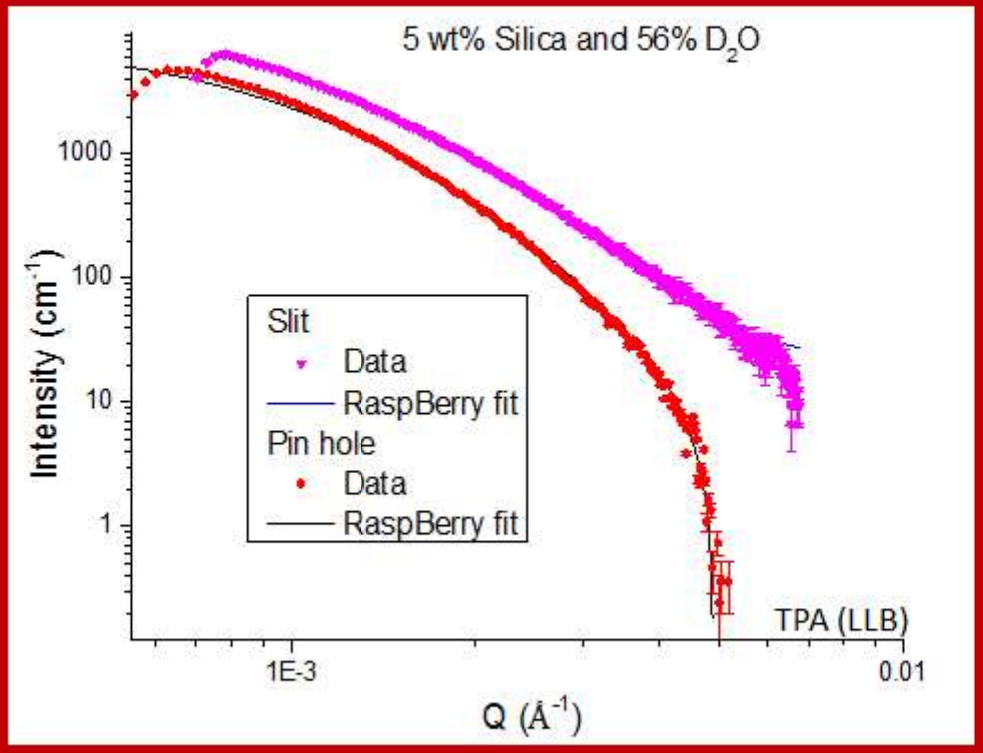
Collimateur VSANS



Data reduction & analysis : real experiment

DC:PT droplets with 5wt% silica nanoparticles and CTAB concentration

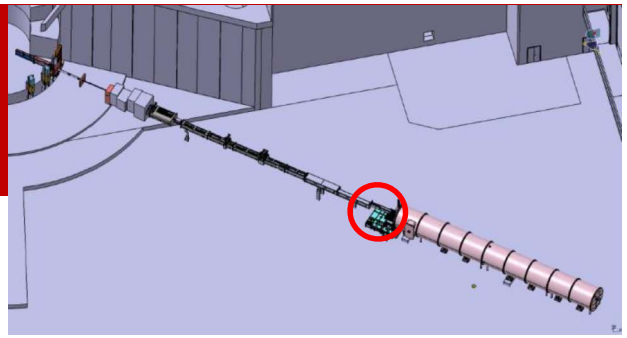
(courtesy A. Brûlet)



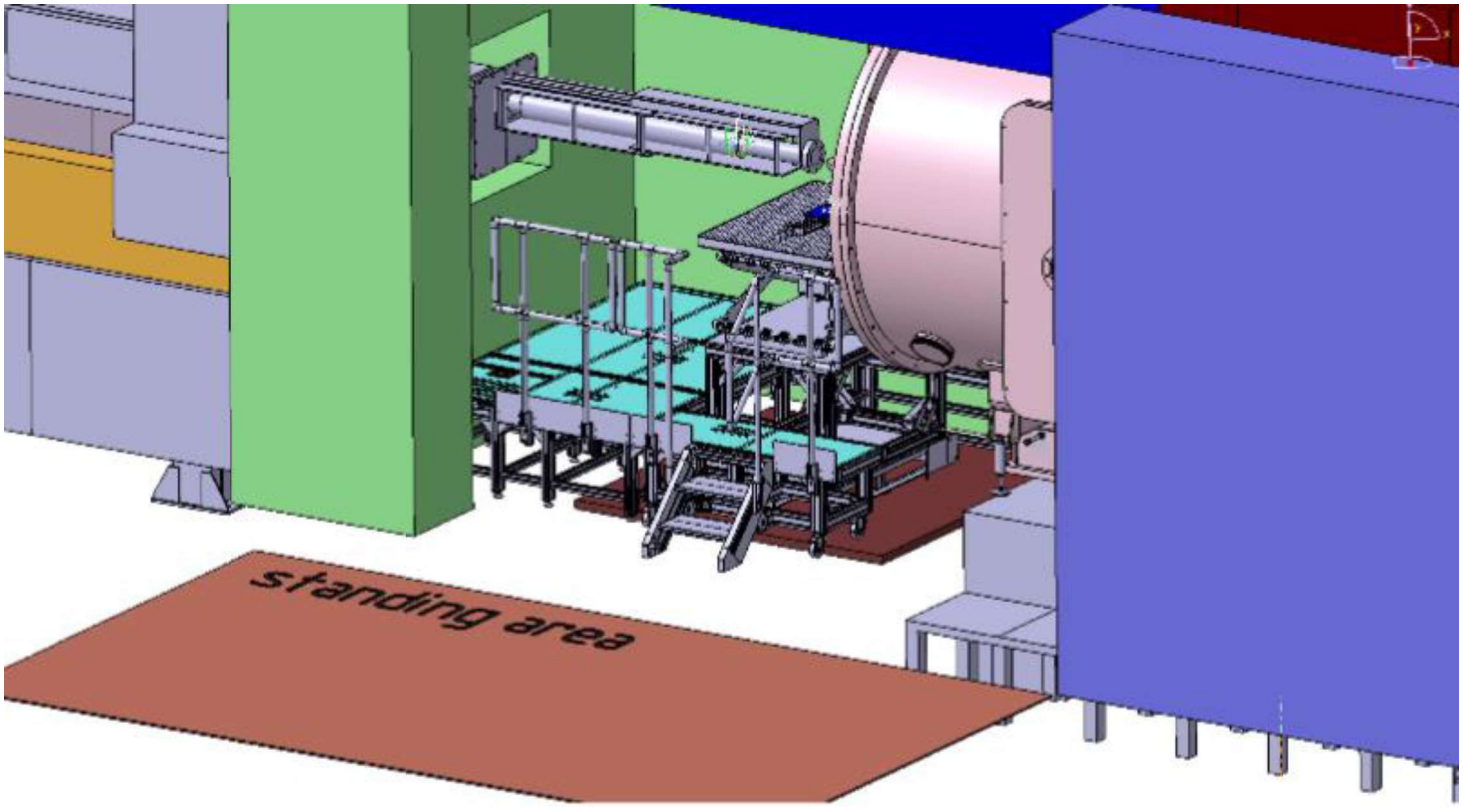
Radius of droplet (Å)	
Slit	1356 +/-5
Pinhole	1358 +/- 0.3

Same model used with appropriate instrumental smearing

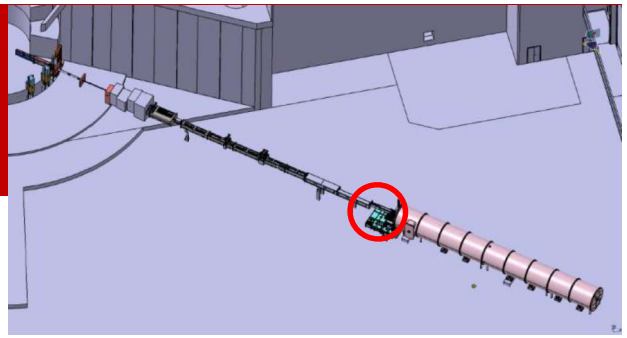
Environnement échantillon



3x3 m^2 surface utile
Dans casemate (qq 10^9 n/s)
Faux-plancher escamotable



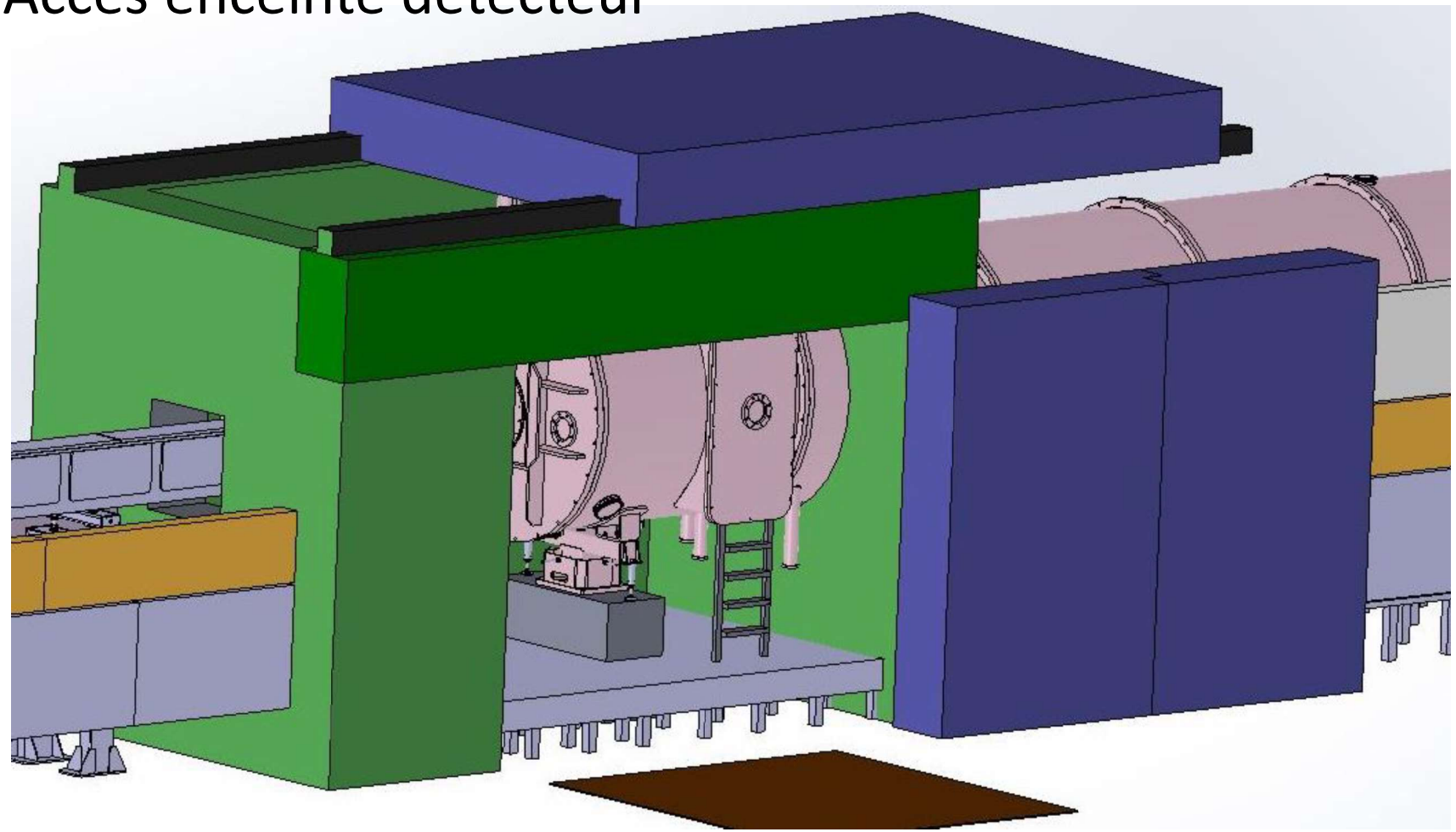
Environnement échantillon



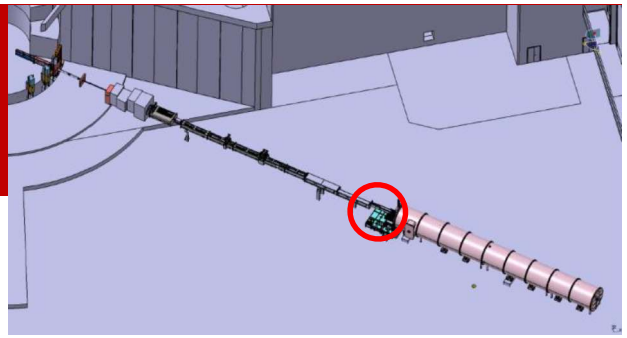
Porte et Toit ouvrants

Pont interne 2T

Accès enceinte détecteur



Environnement échantillon

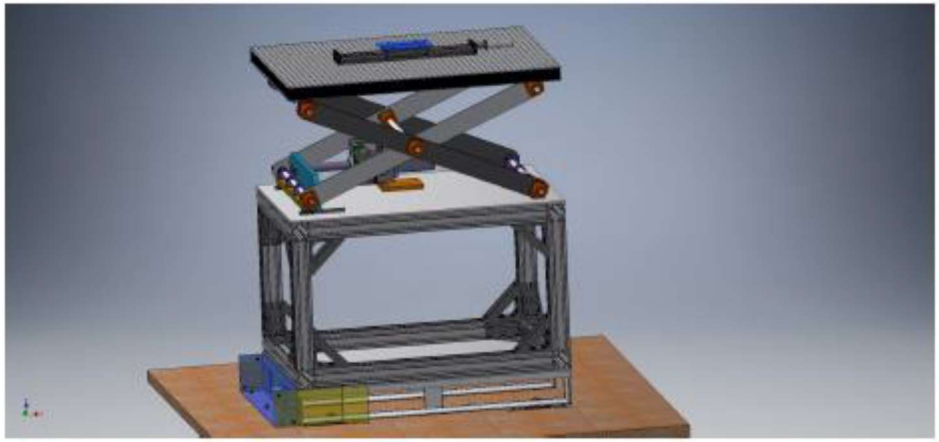


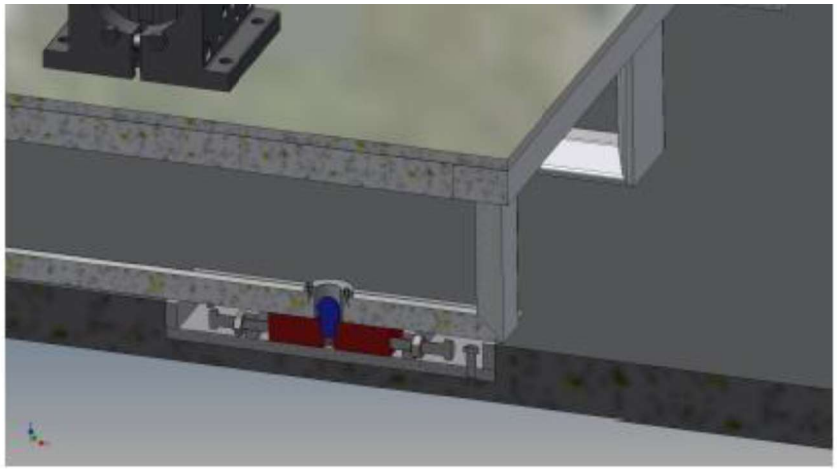
TRES limité:

- 2 Passeurs d'échantillons

→ Standardisation des supports

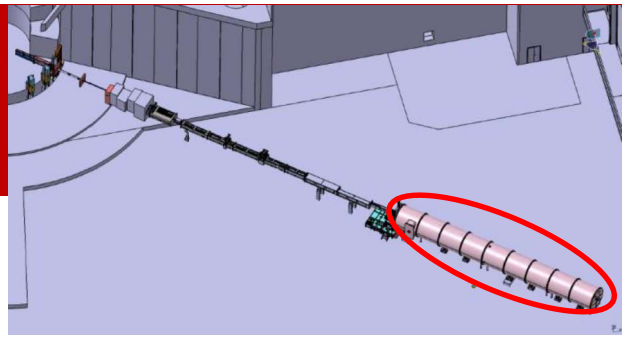
→ Mutualisation des environnements (LoKI)



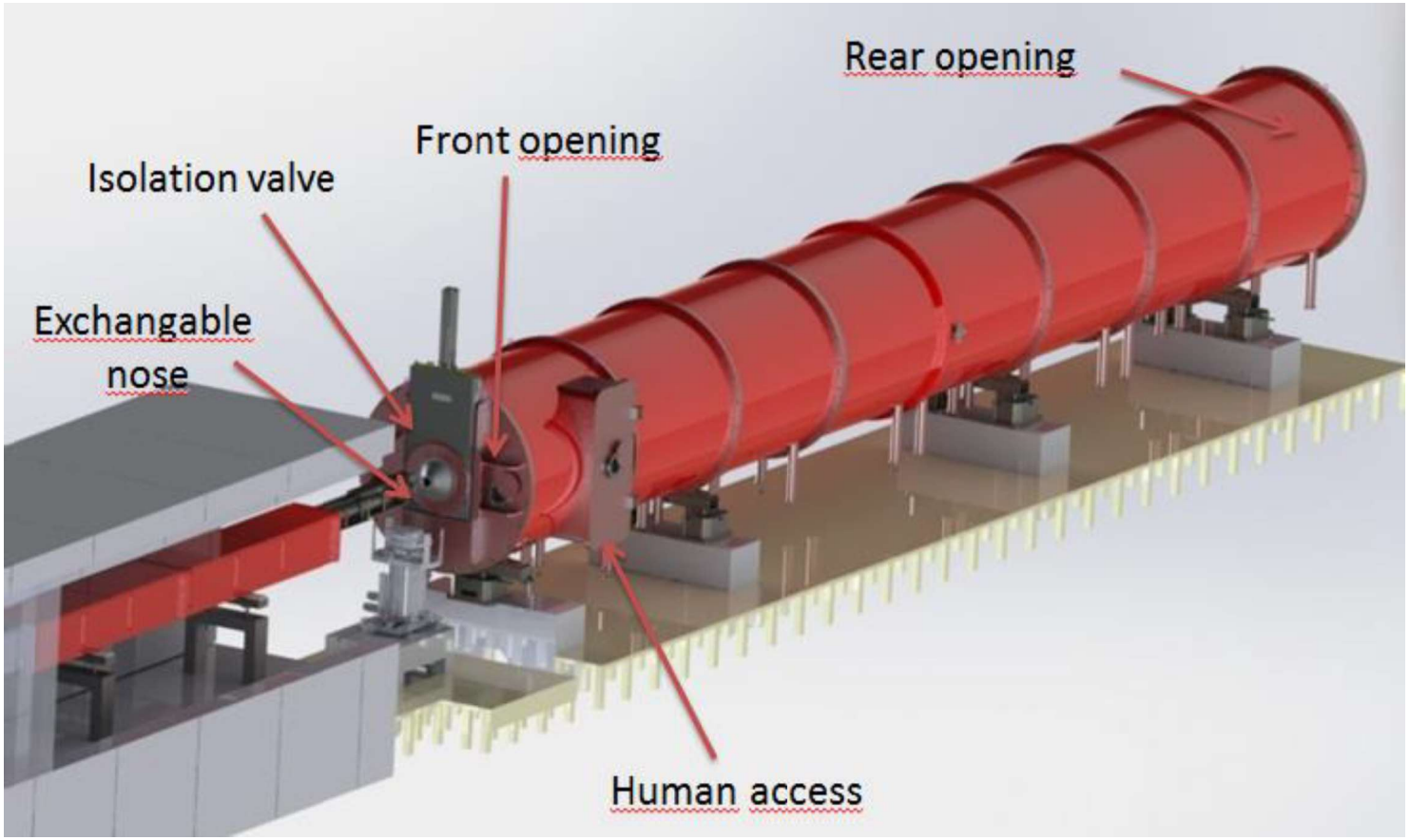


+ Réglage environnements hors faisceau

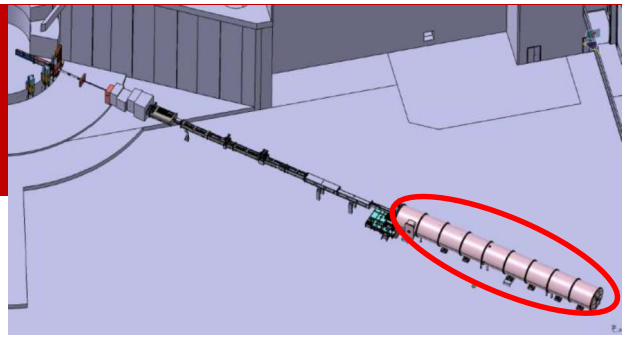
Détection



Tube 20 m sous vide
3 détecteurs simultanés

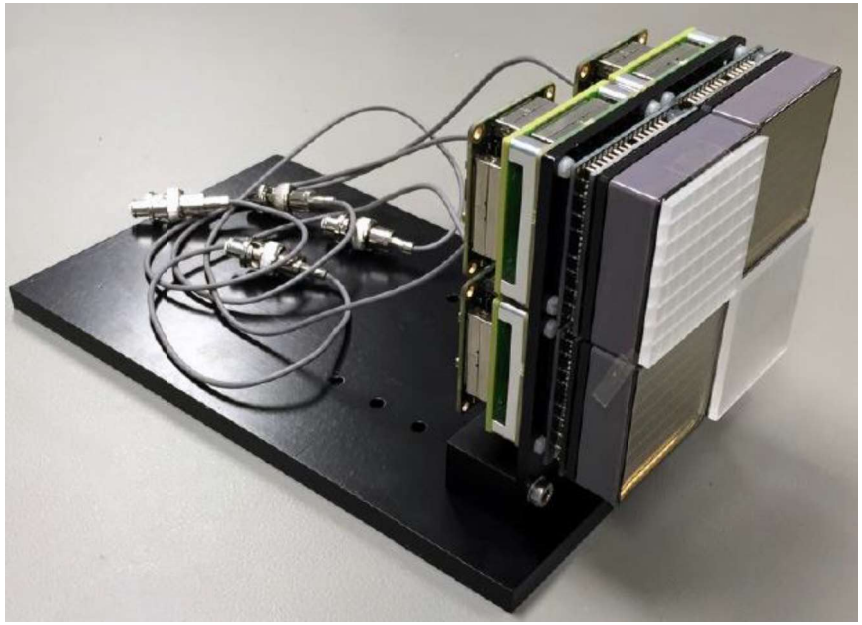


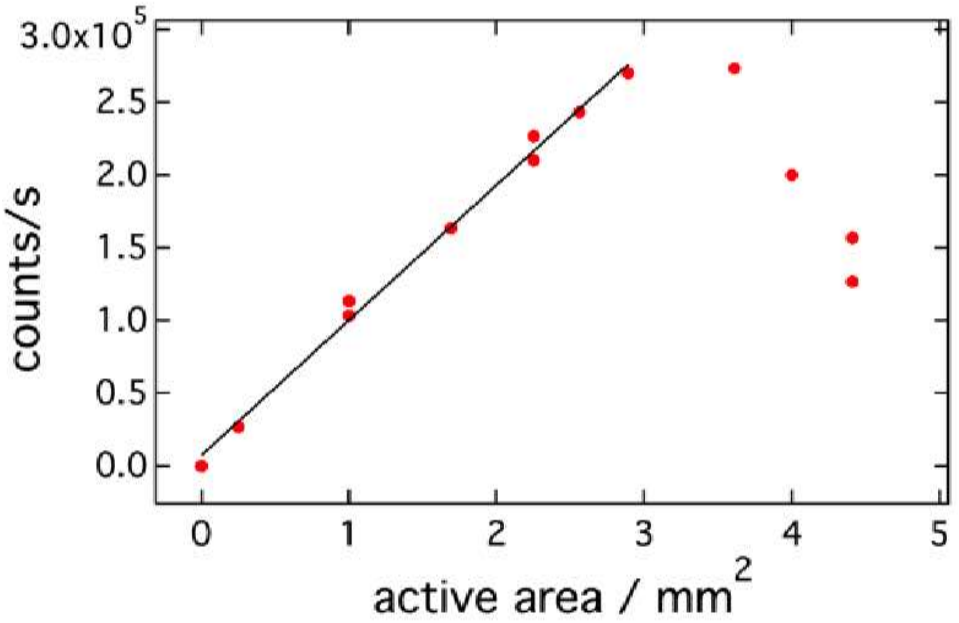
Détecteur - SoNDe



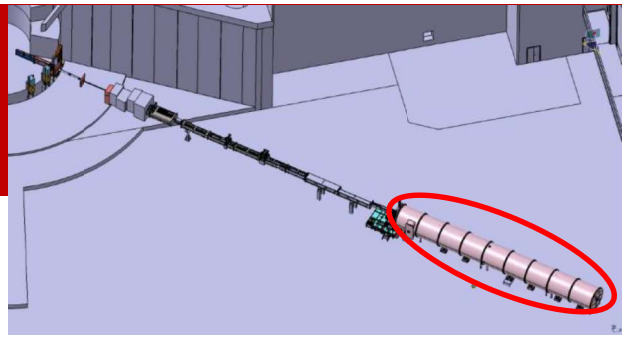
Scintillateur + PMT

Module (8x8 pixels de 6 mm): 50x50 mm^2
Linéarité module: 250 kHz
Linéarité pixel: 125 kHz
Electronique masquée





Détection



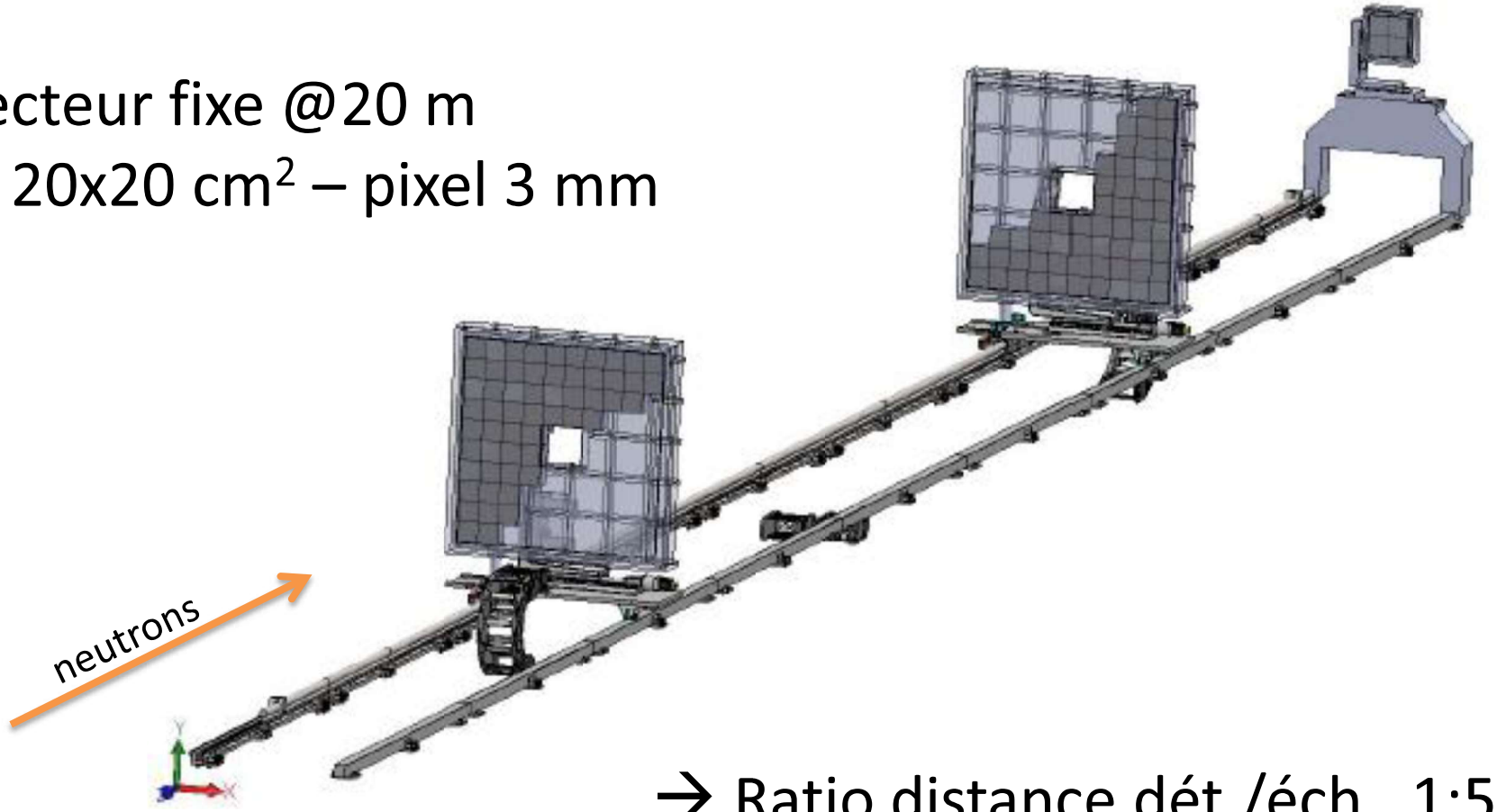
2 détecteurs mobiles

1m^2 – pixel 6 mm

400 modules / détecteurs

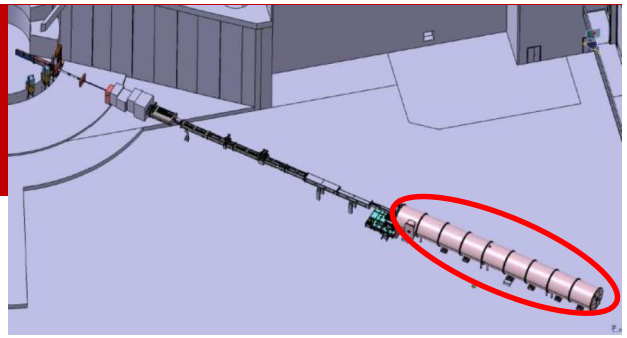
1 détecteur fixe @20 m

20x20 cm^2 – pixel 3 mm



→ Ratio distance dét./éch. 1:5

Détection

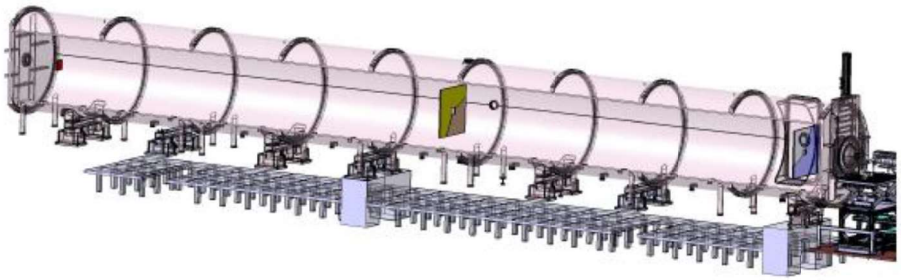


Collimation 8 m

Detector 1: 1.6 m SDD

Detector 2: 8 m SDD

Detector 3: 20 m SDD

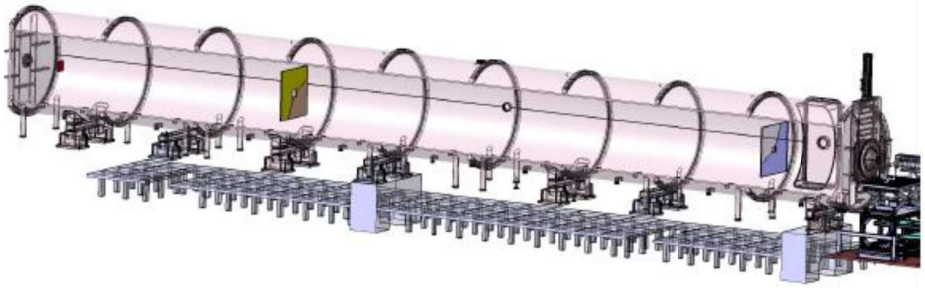


Collimation 14 m

Detector 1: 2.8 m SDD

Detector 2: 14 m SDD

Detector 3: 20 m SDD

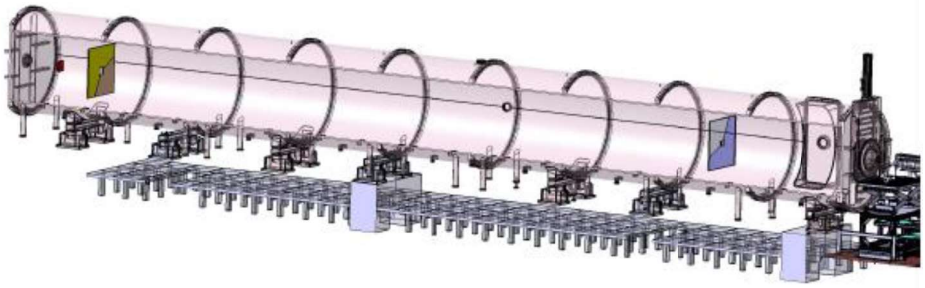


Collimation 20 m

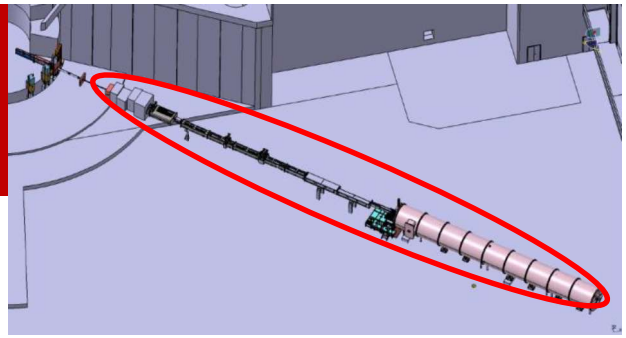
Detector 1: 4 m SDD

Detector 2: 18.5 m SDD

Detector 3: 20 m SDD



Protections + Infra.



60 cm béton / 10 cm fer / 5 mm B4C