Projet SP2 - DESIR
Séminaire technique DESIR
Caen, 05-06 février 2026

GPIB

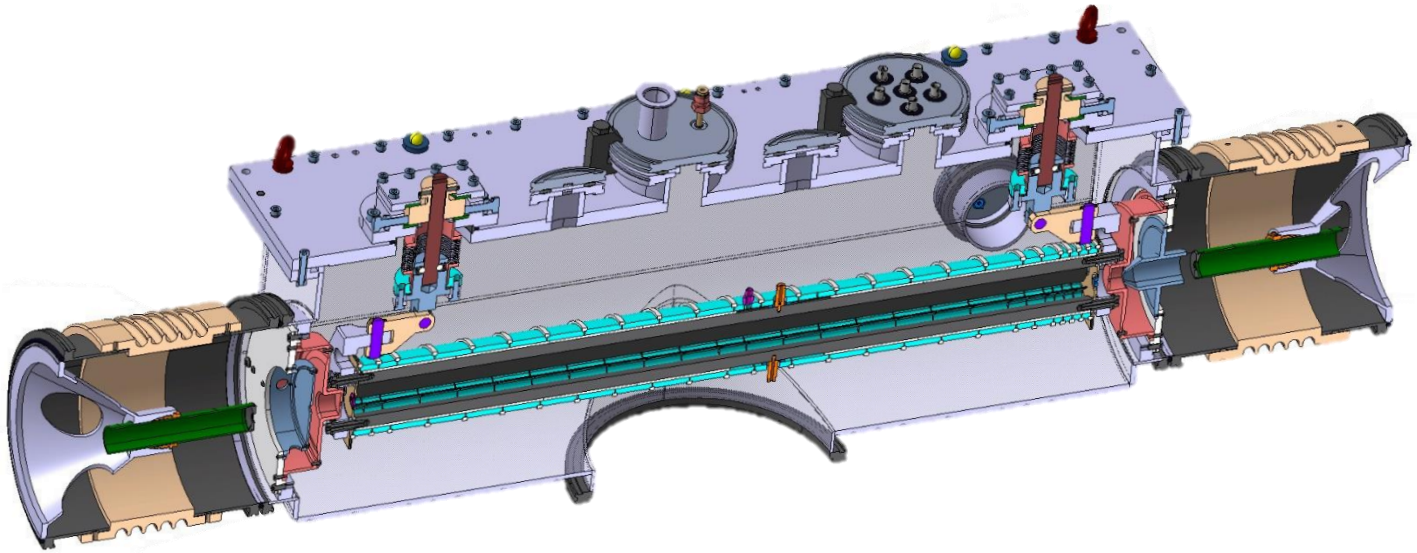
General Purpose Ion Buncher

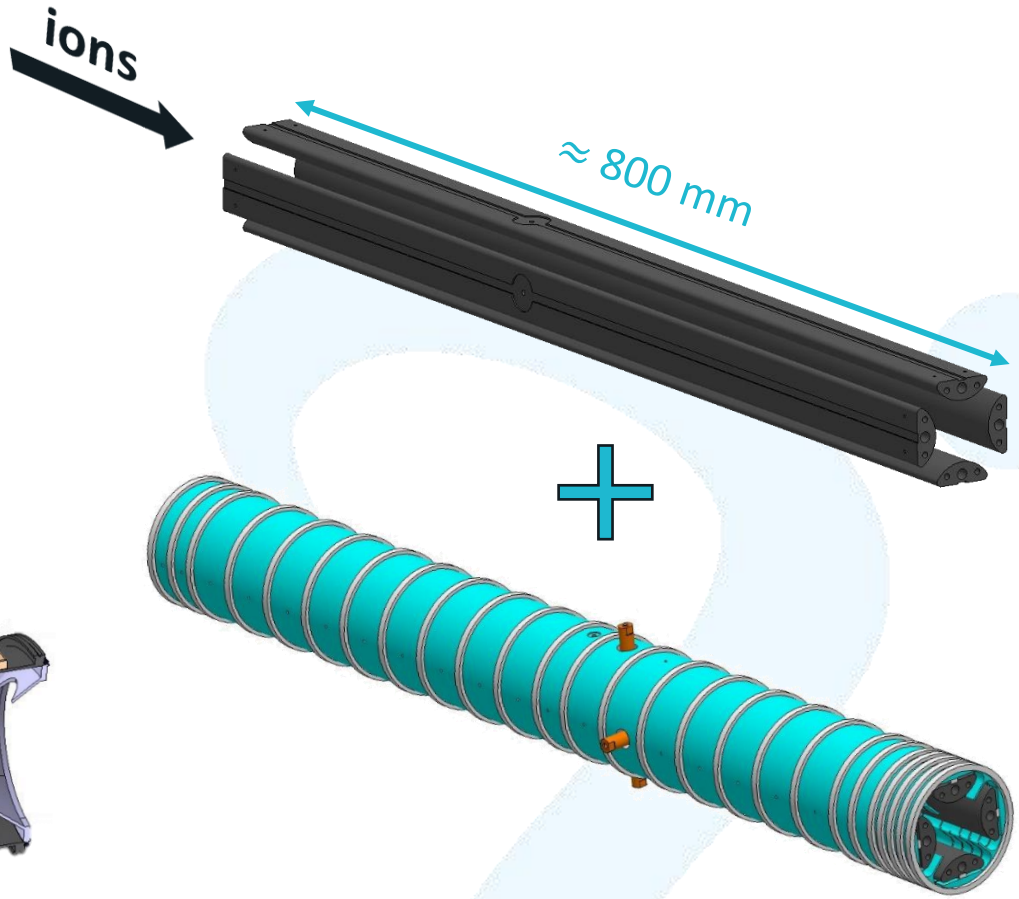
Corentin ROUMEGOU, LP2iB

« RFQ - Cooler Buncher »

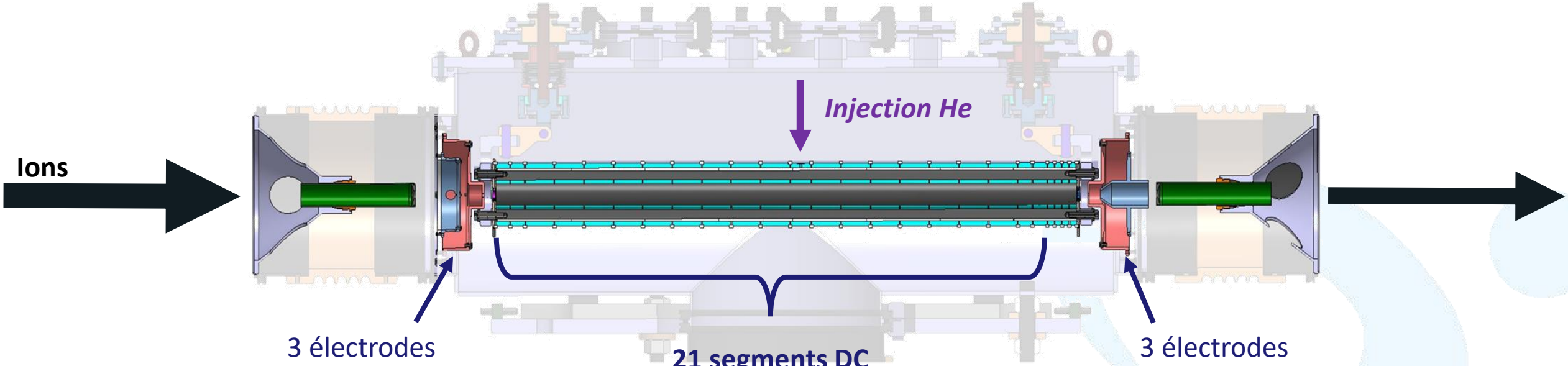
Refroidisseur-Regroupeur Radiofréquence

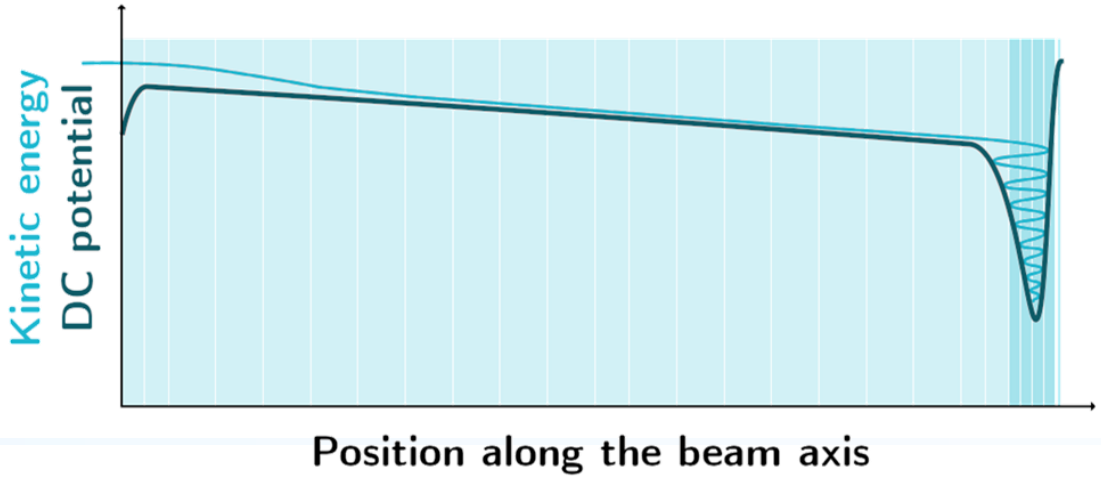
- Piégeage radial grâce à 4 barreaux **RF**
- Guidage longitudinal avec 25 segments **DC**
- Refroidissement par gaz tampon (**He**)





Empaqueter les ions pour DESIR





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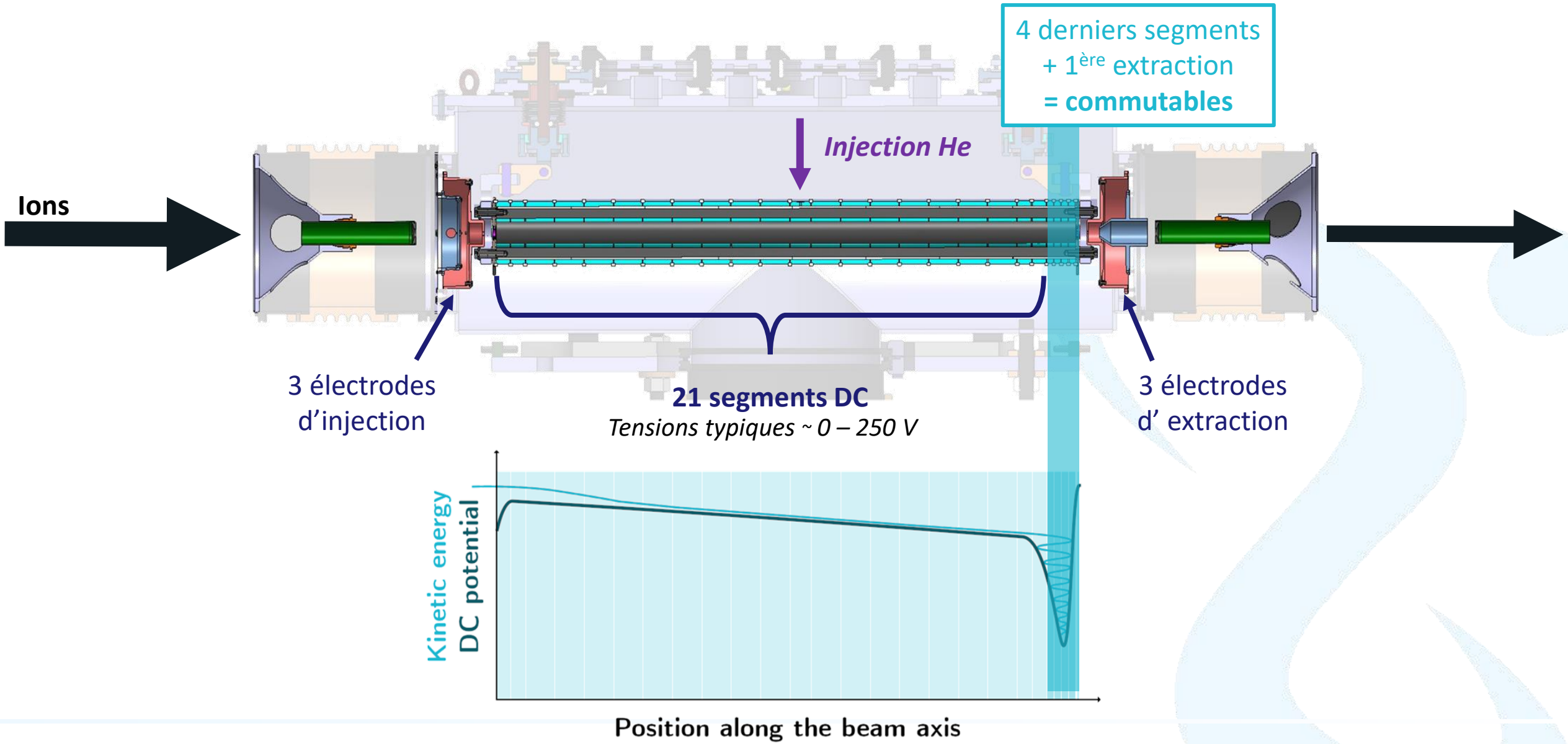
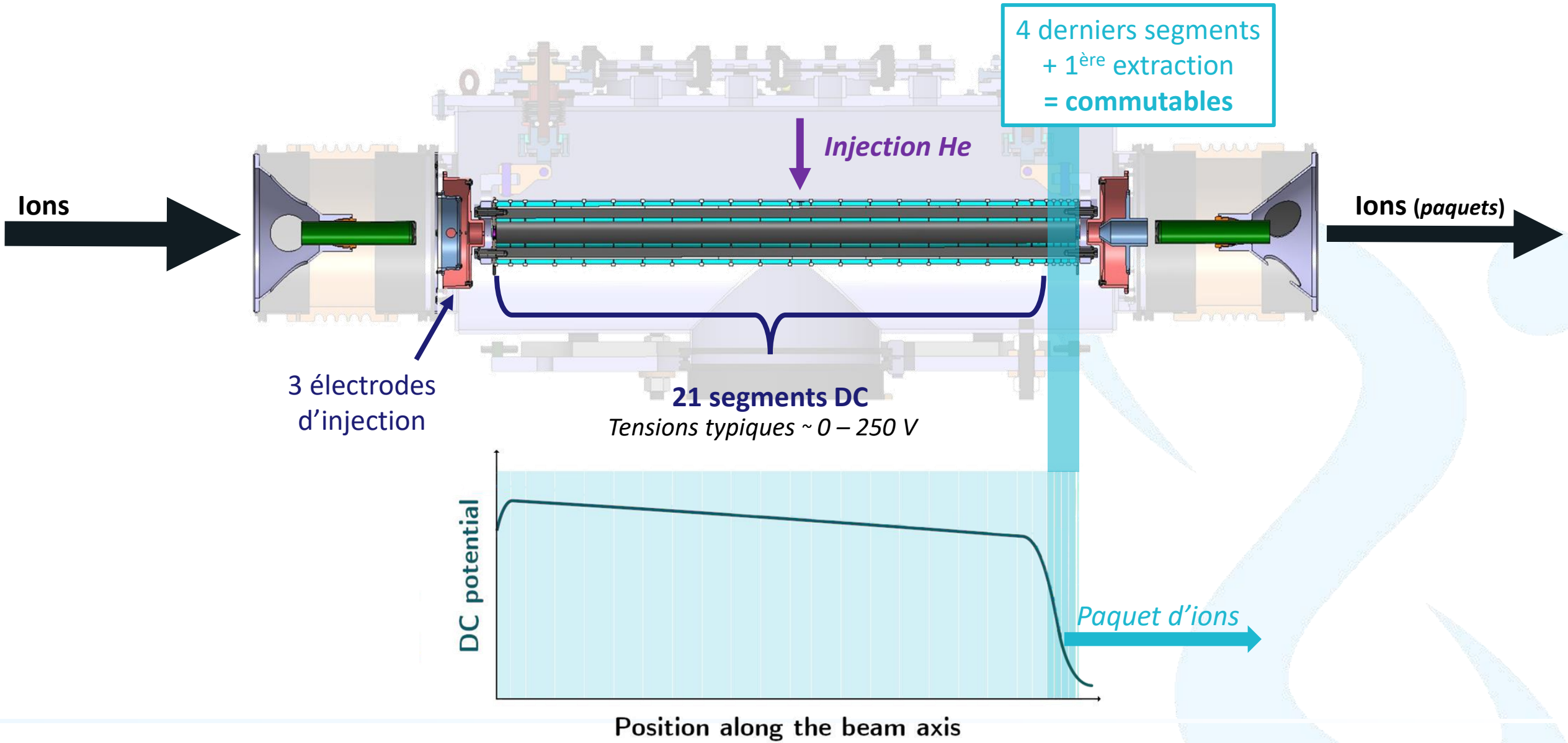
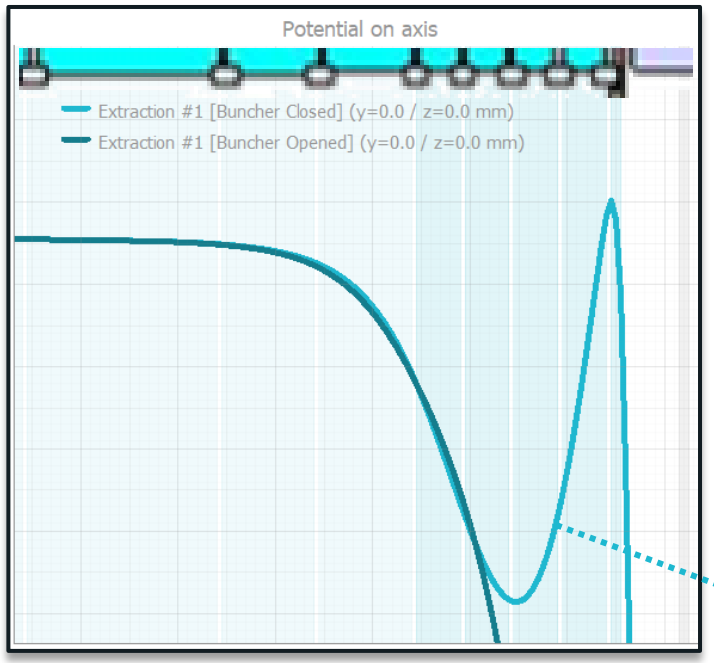
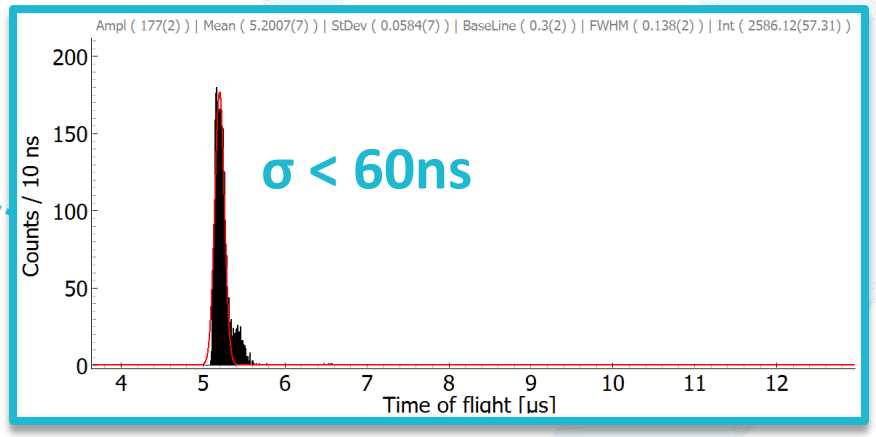


Empaqueter les ions pour DESIR



Caractéristiques faisceaux @ 3keV





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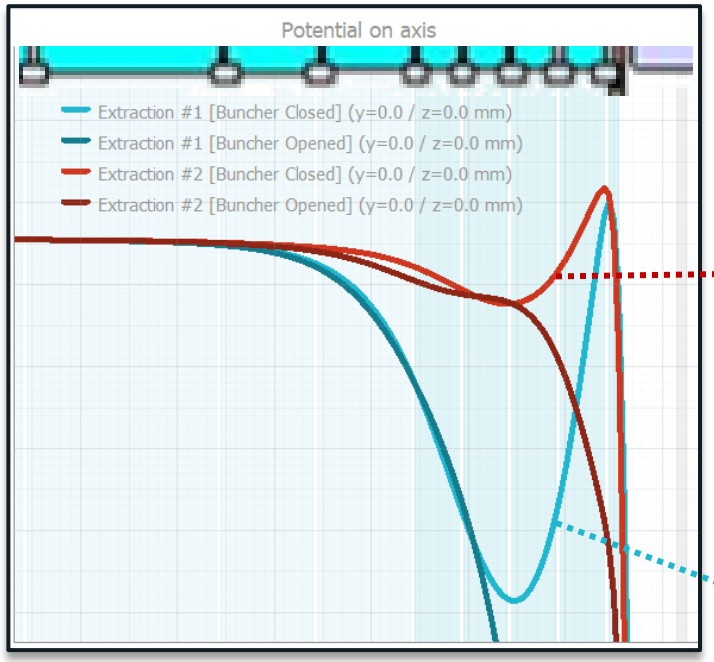
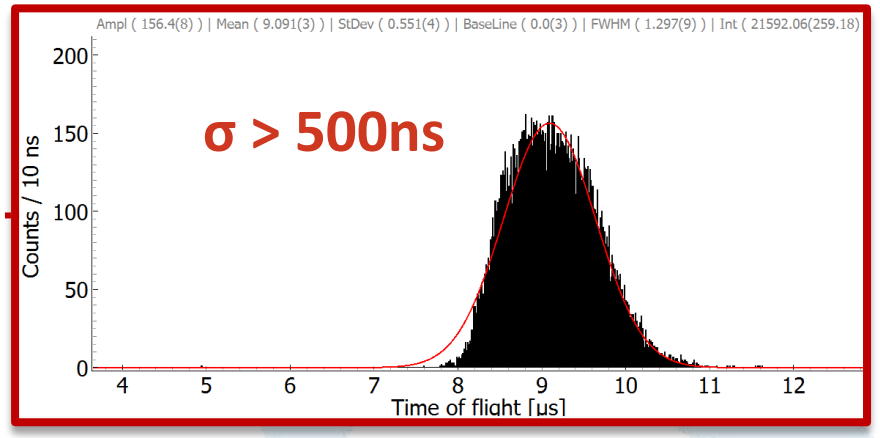
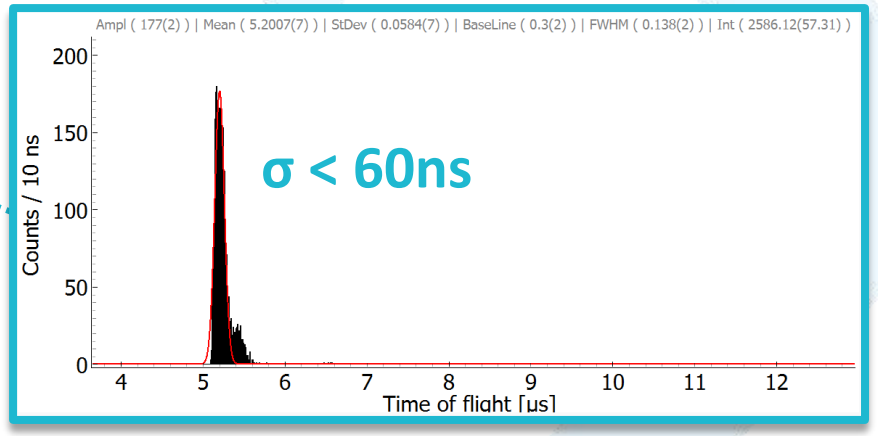


- Dispersion temporelle -





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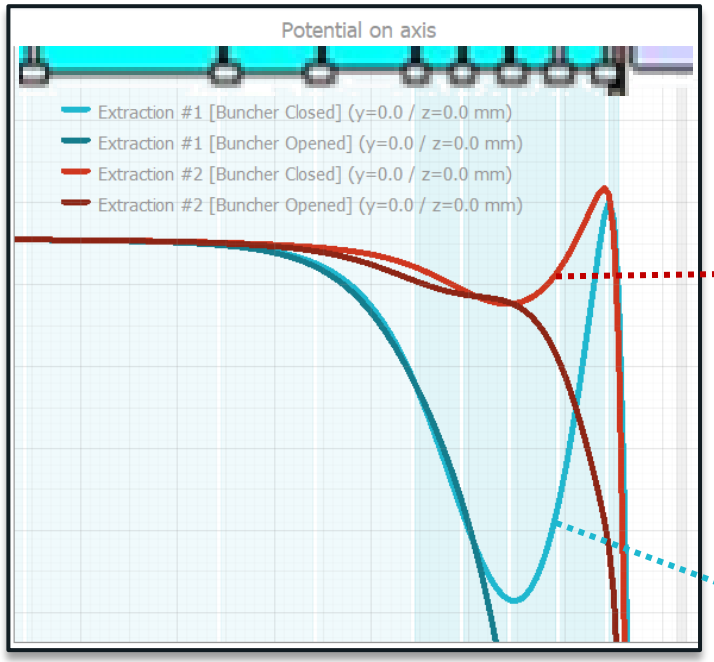

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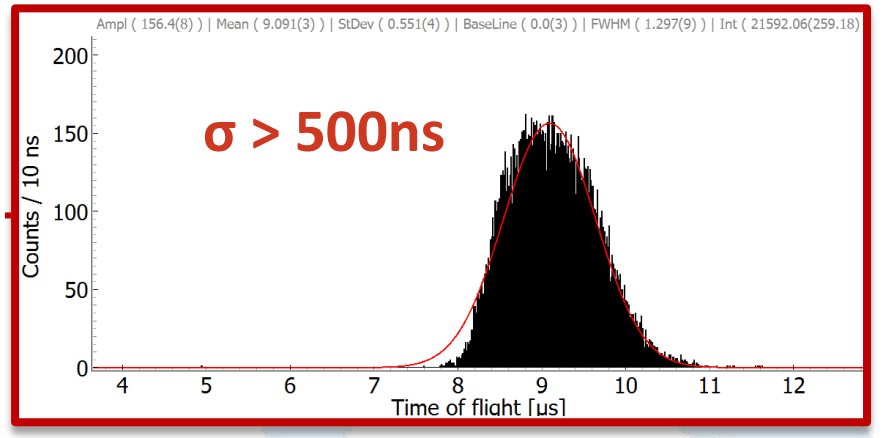
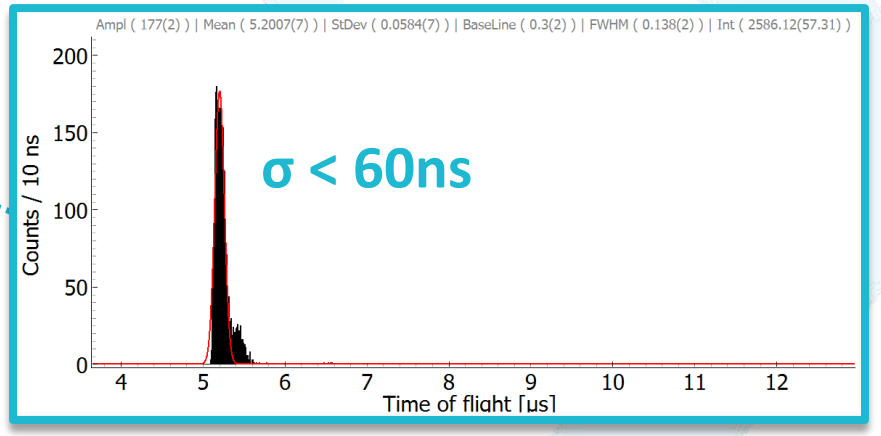
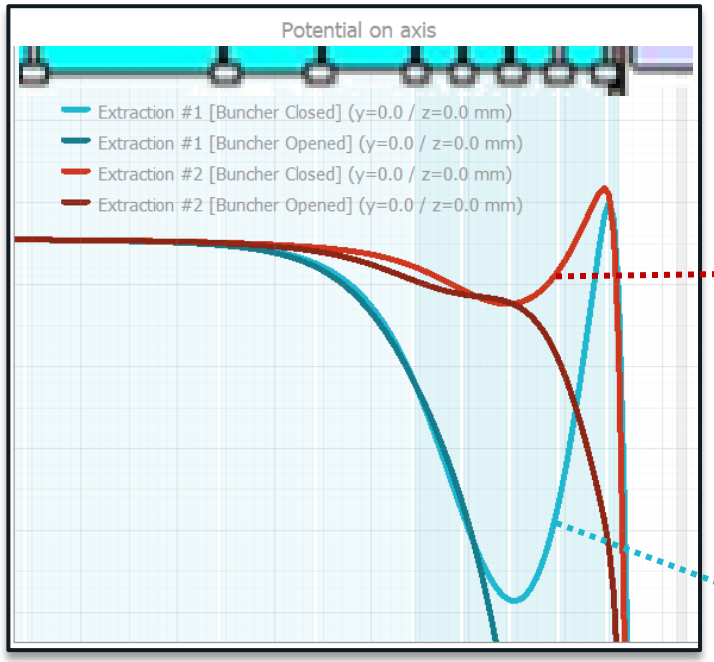




- Dispersion en énergie -

- **ΔE < 2eV** démontré en faisceau continu
- **ΔE ~ 5eV** en faisceau bunché. Études en cours...

Caractéristiques faisceaux @ 3keV



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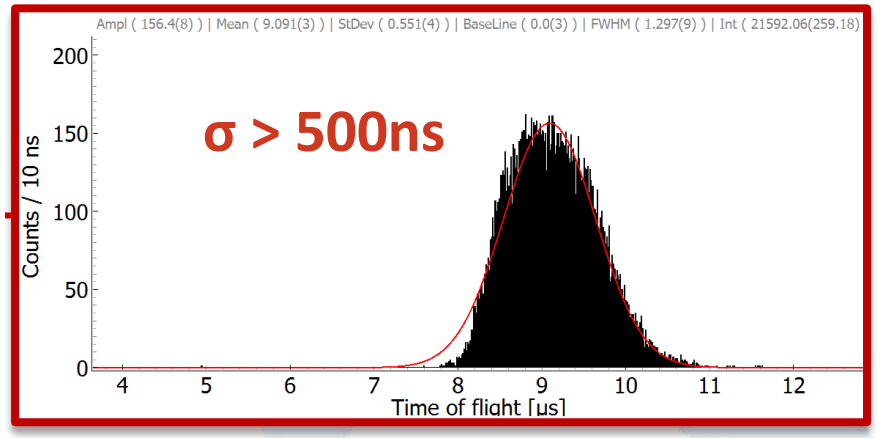

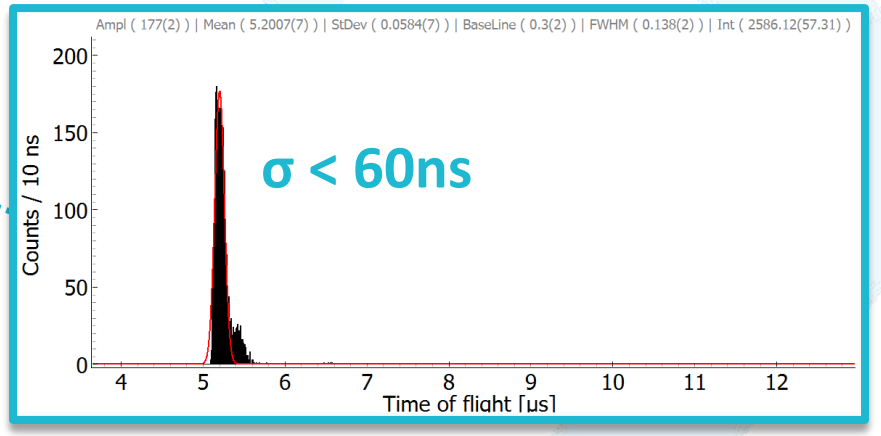

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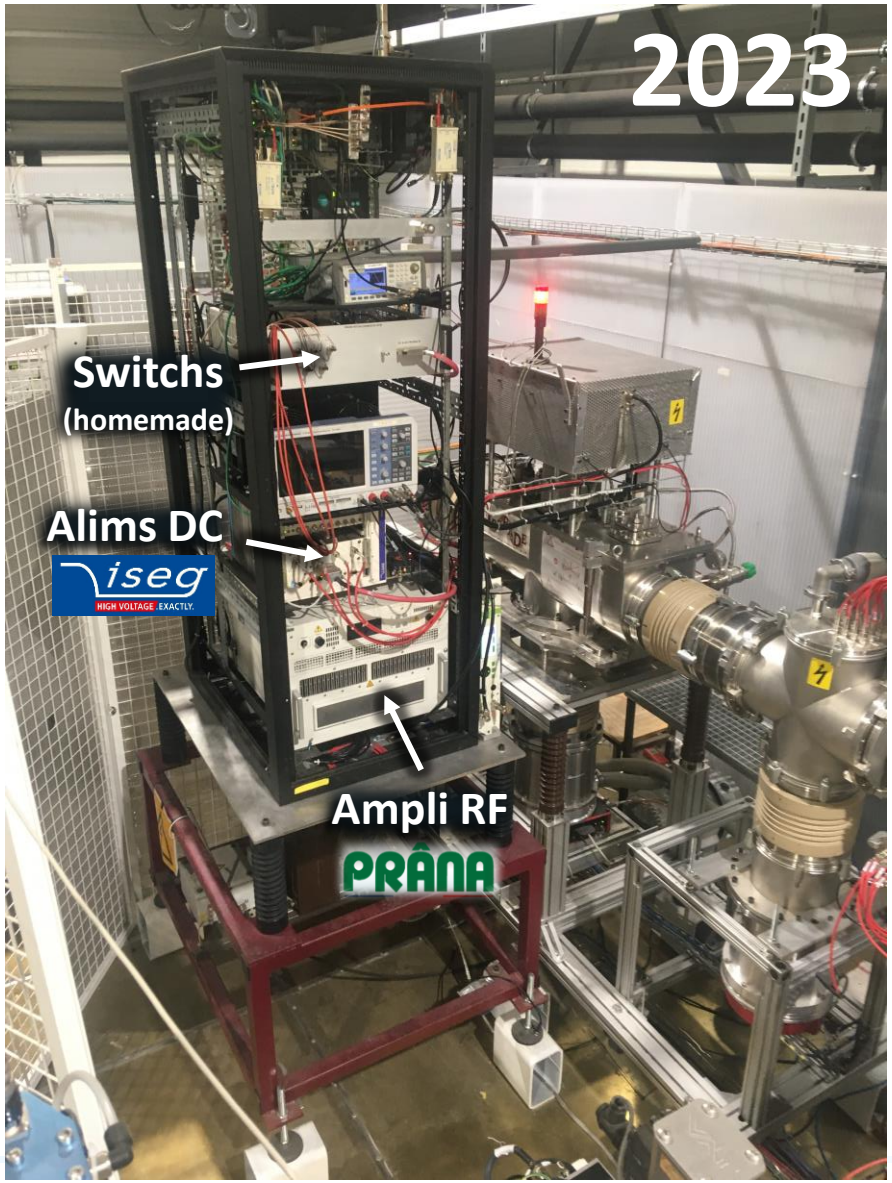
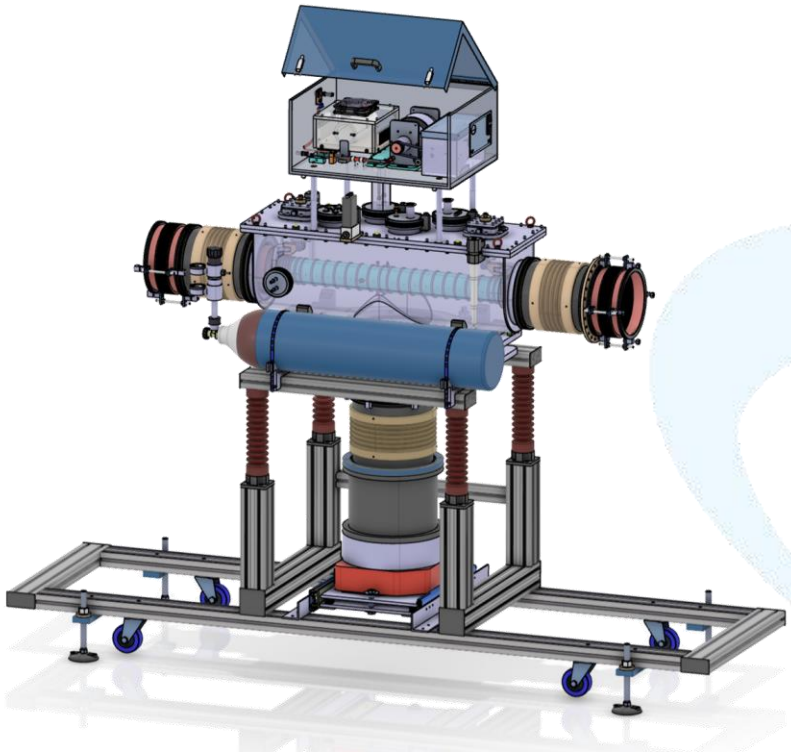
- Émittance -

- Travail en cours sur **émittancemètre** (mesure faisceau continu démontrée sur HRS) -> hardware/software

GPIB @ LP2iB : 2023



Vue 3D du montage actuel au LP2iB



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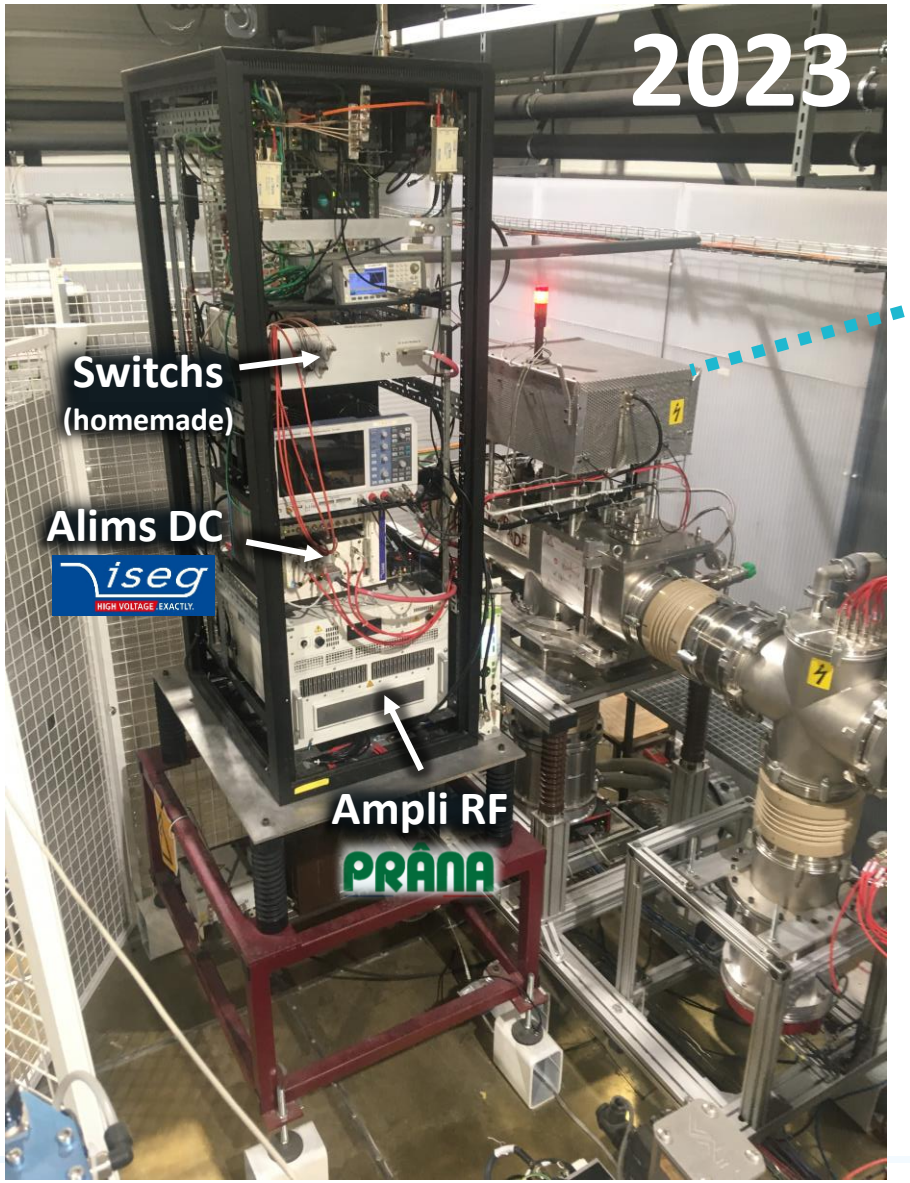

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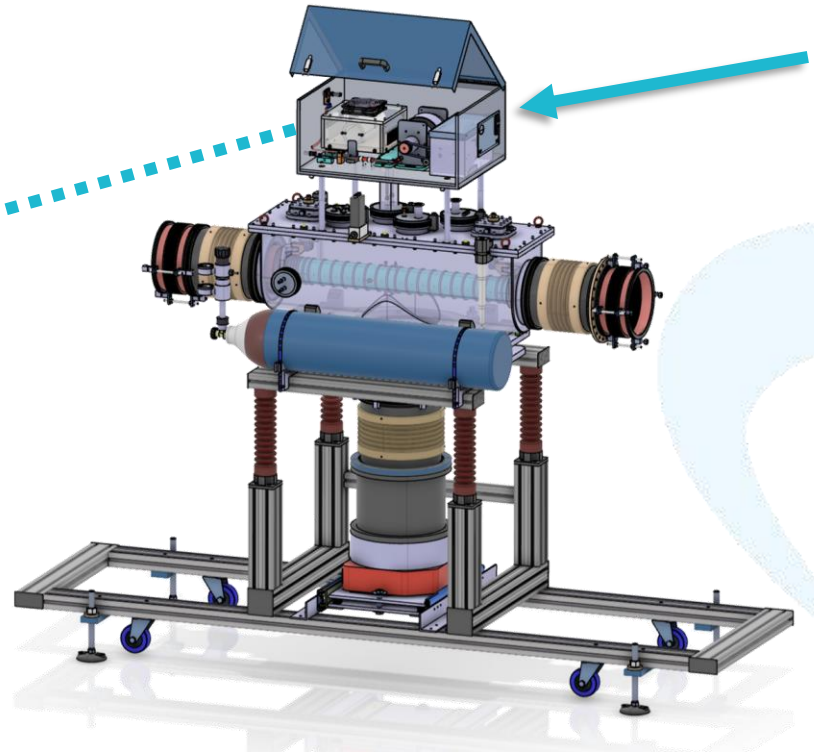
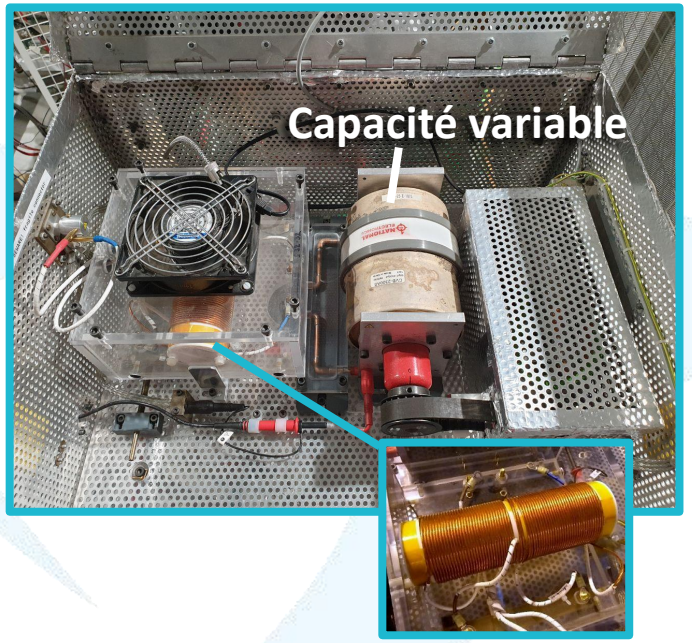


Circuit RF



3 bobinages interchangeables
(pour couvrir une large gamme de fréquences)

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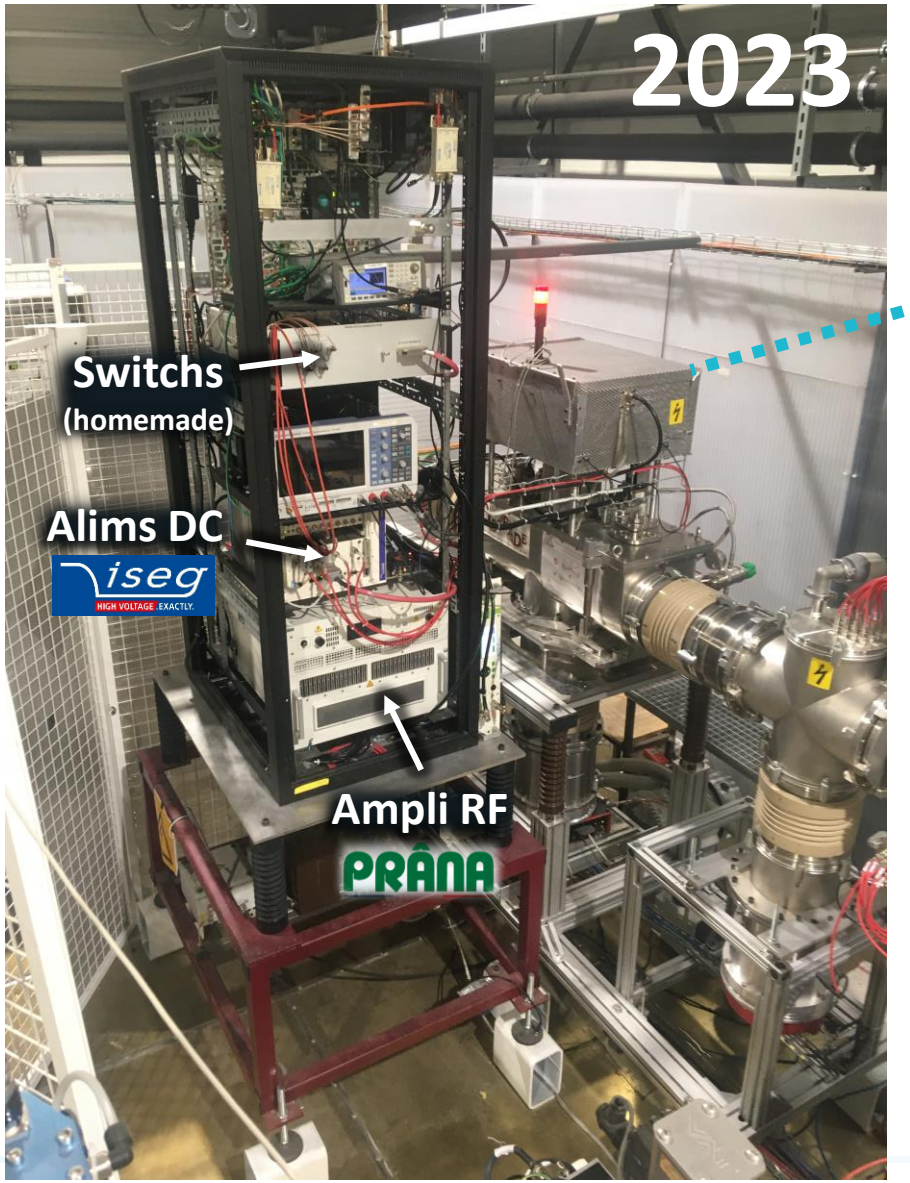

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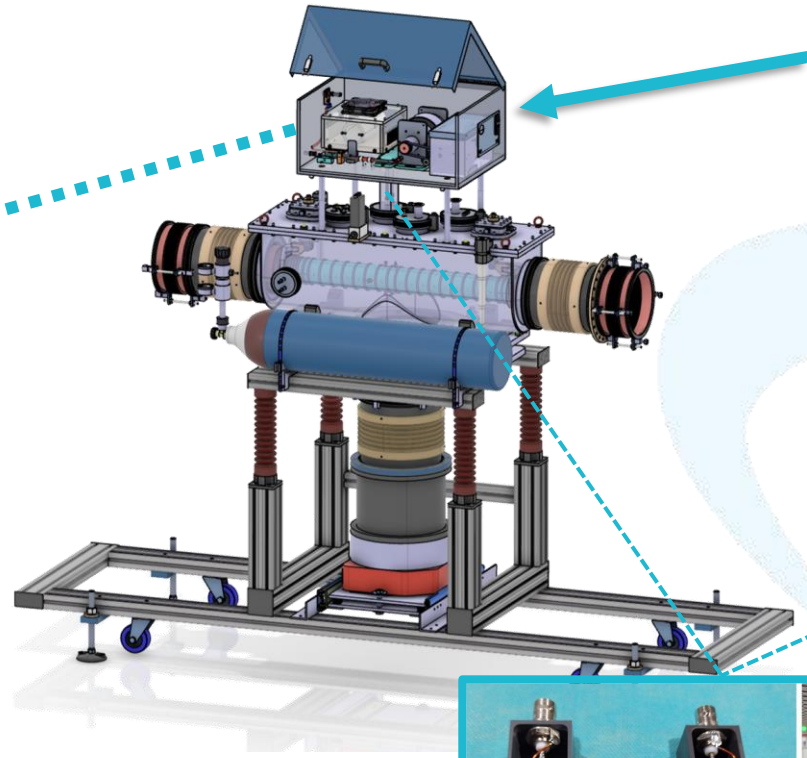

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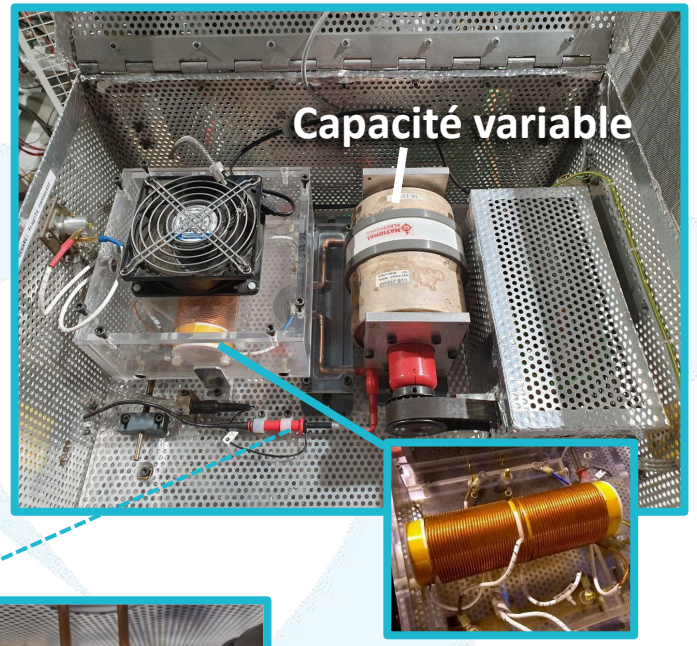

3 bobinages interchangeables
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Sondes RF

- 2 sondes directes ⚠< 4 kV_{pp}
- 2 sondes Rogowski *-> problèmes récents…*

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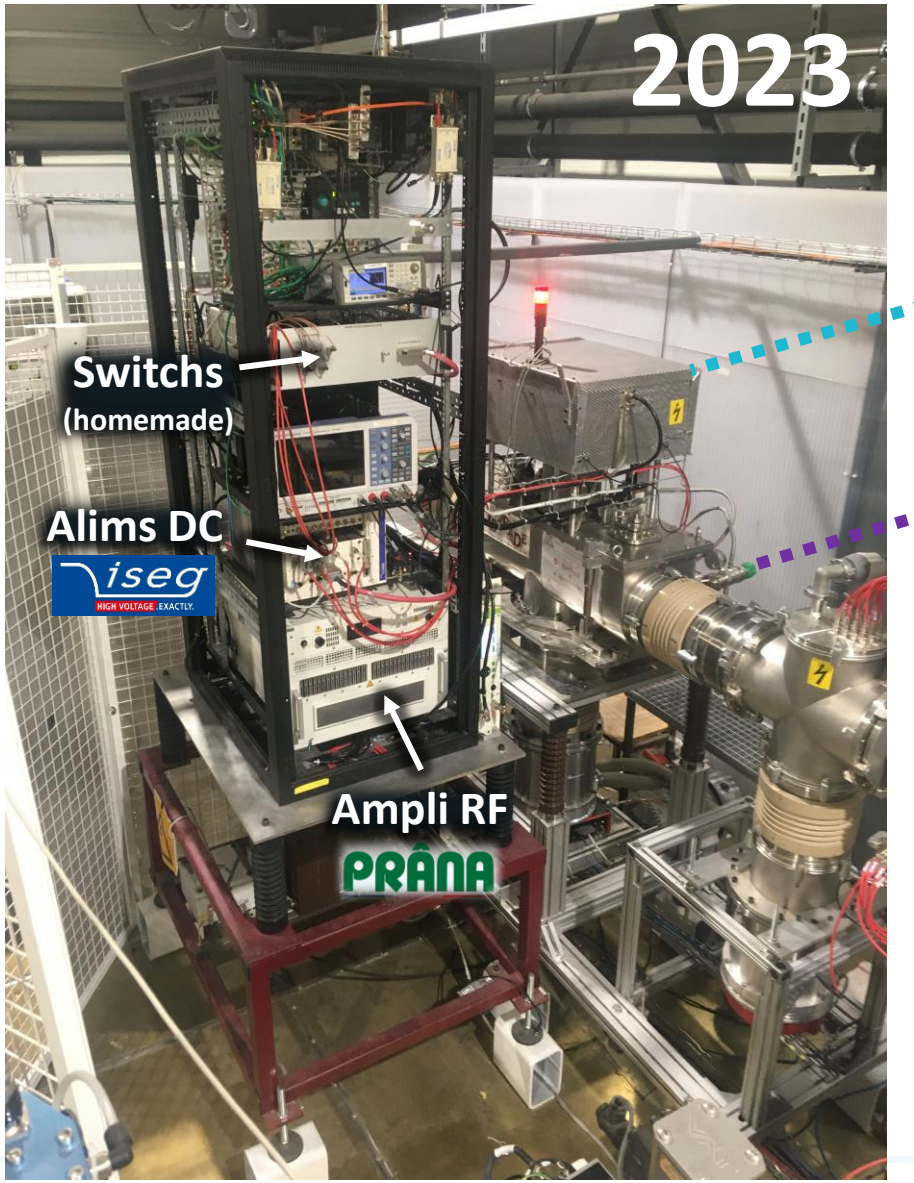
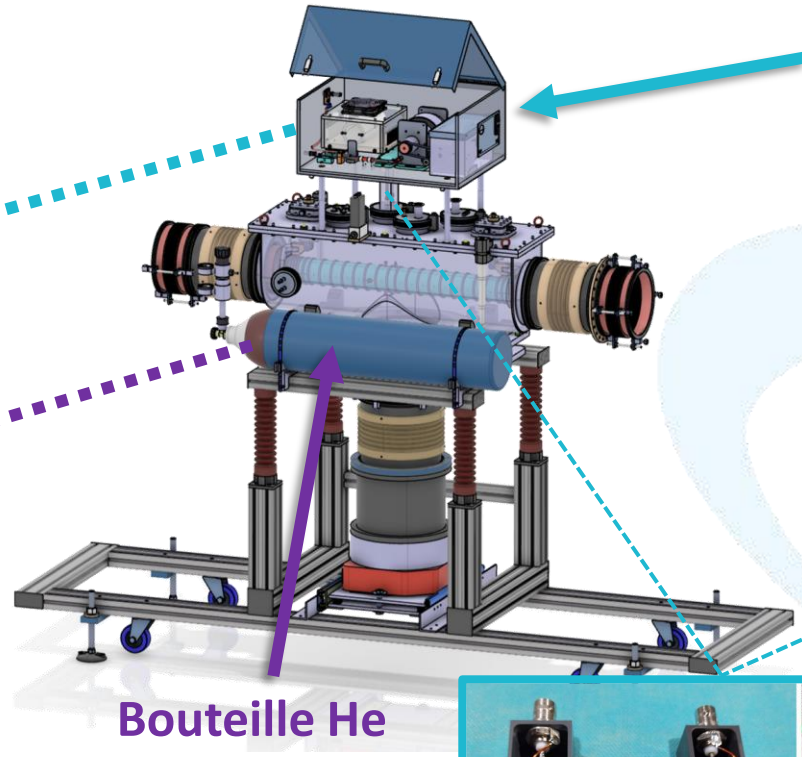


Vue 3D du montage actuel au LP2iB



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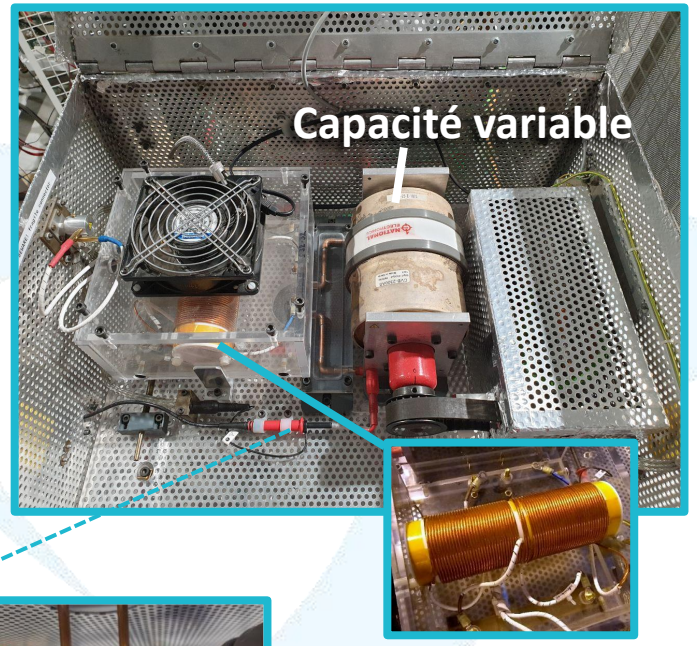

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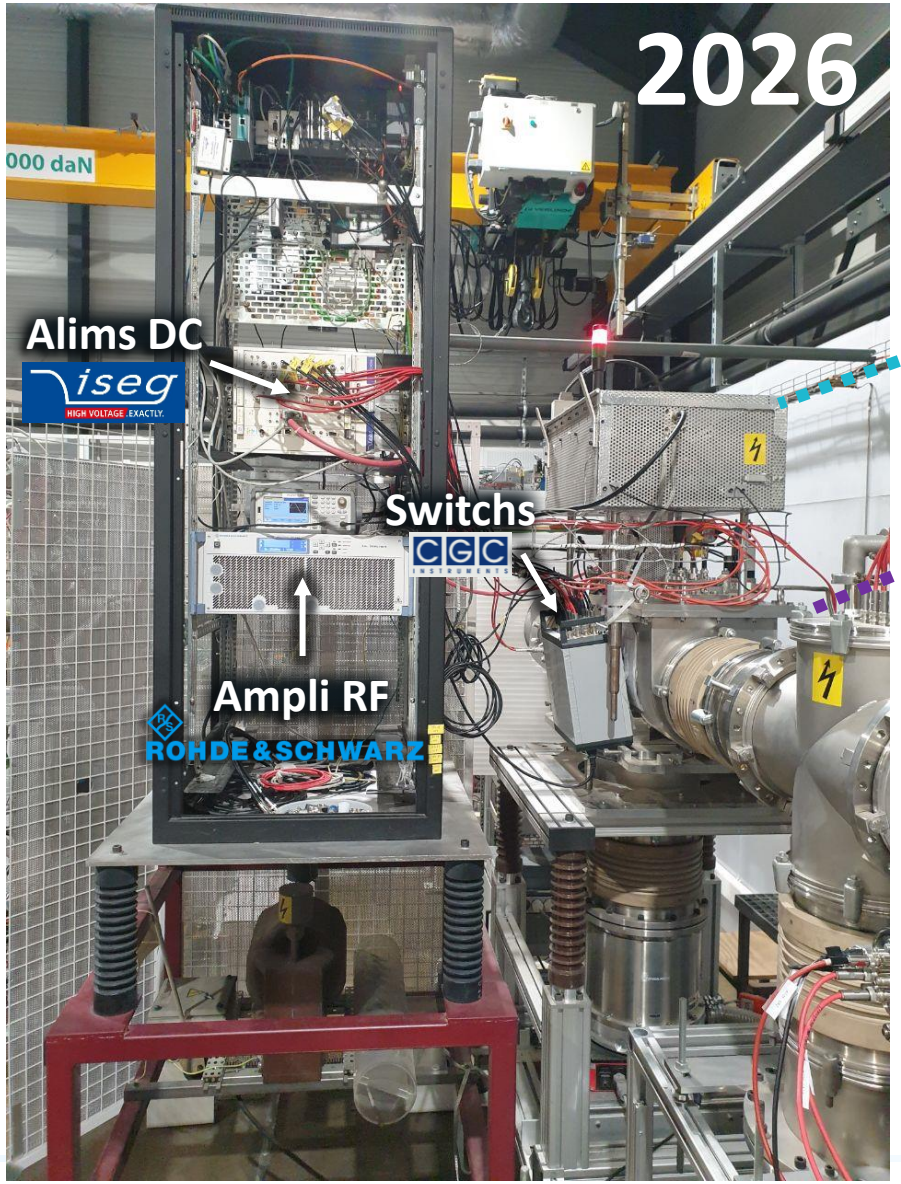

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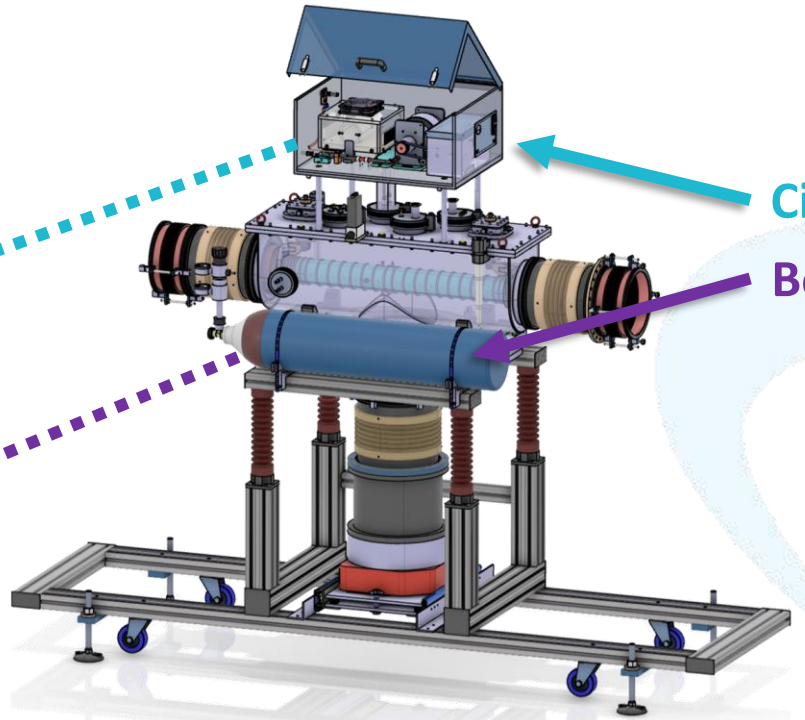
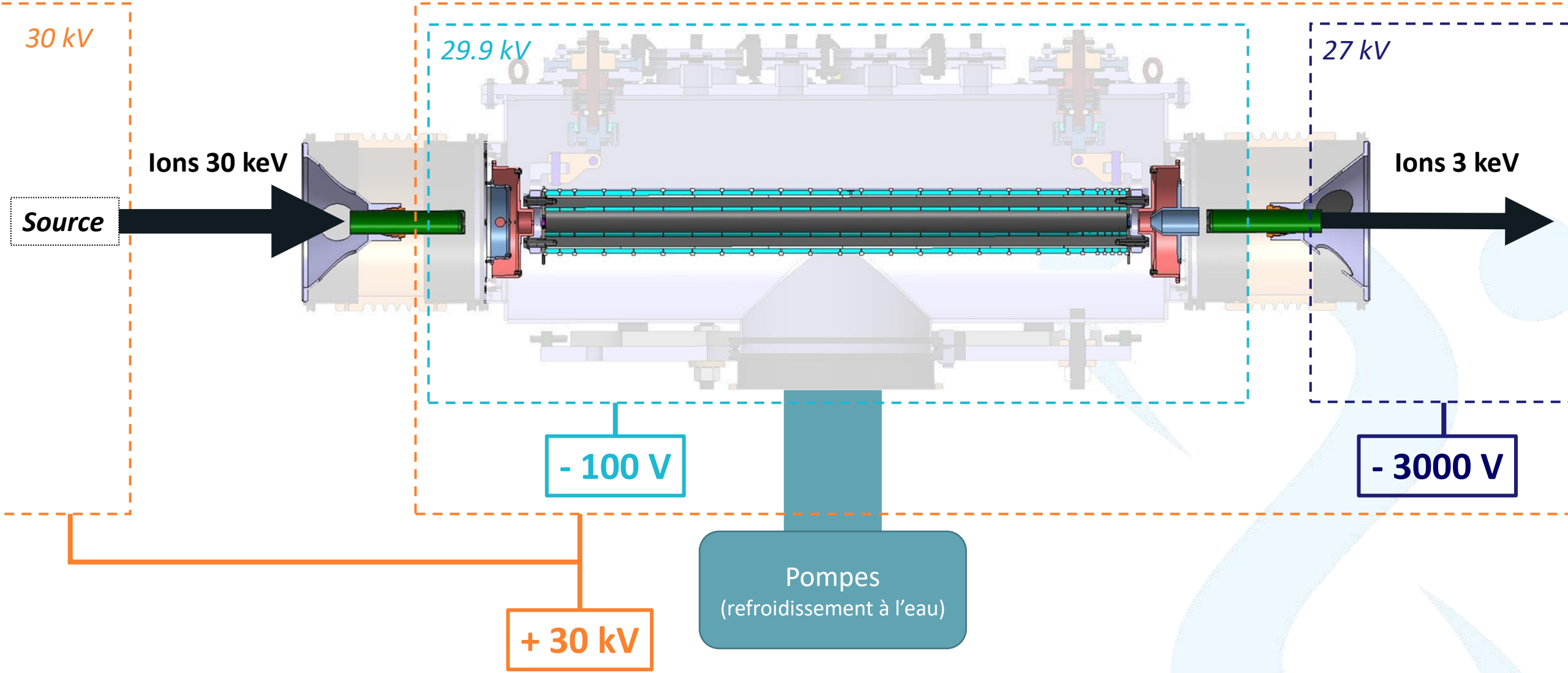


Module ISEG - configuration actuelle :

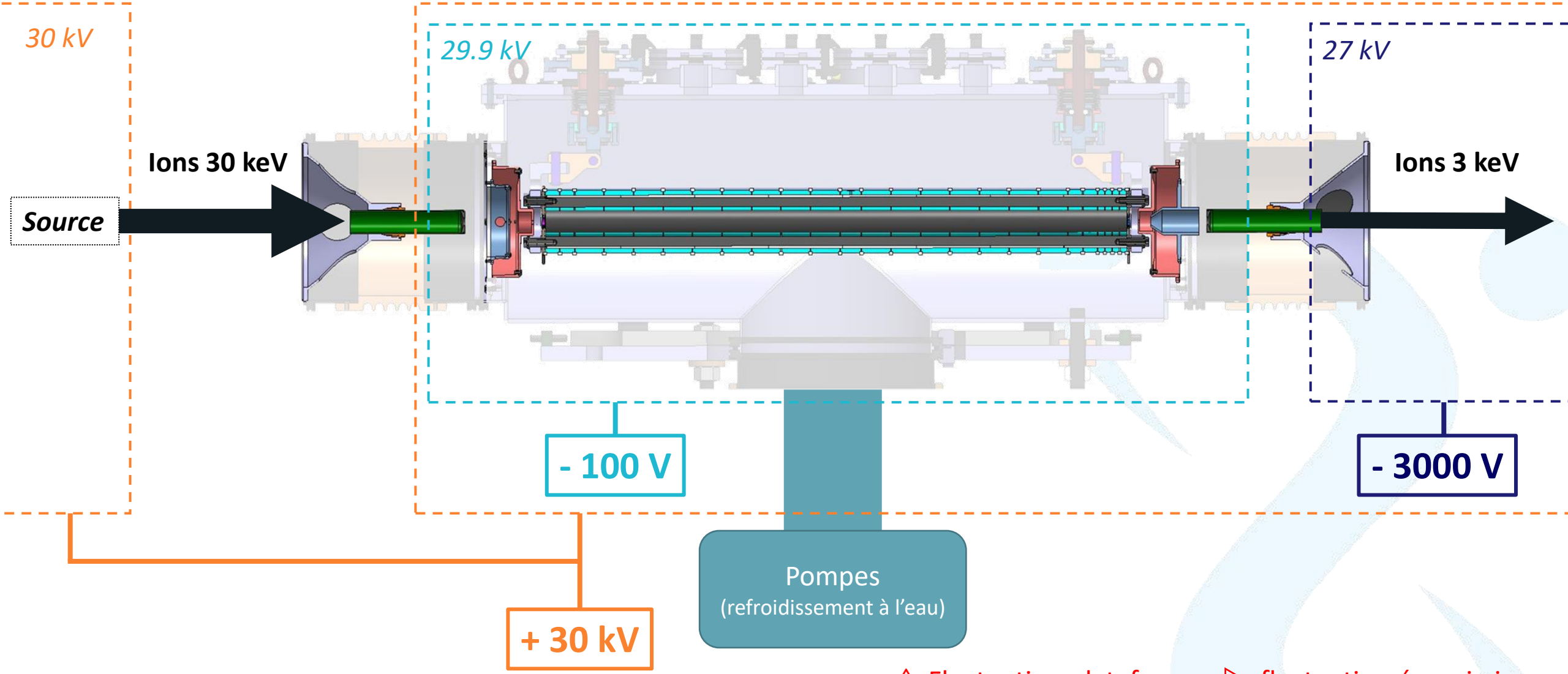
- 4 x **-10k V** [EHS 4 0100n] : électrodes injection et extraction ➢ SHV-10
- 22 x **+500 V** [EHS 20 105p] : segments DC fixes ➢ 32pins-DB25
- 5 x **+1 kV** [EHS F0 10X] : segments « Closed » ➢ SHV-5
- 5 x **±500 V** [EBS 8 005] : segments « Opened » ➢ BNC

Switchs ➢ 5 x **CGC AMX1500** - commutation 1.5kV < 50ns ➢ SHV-5

GPIB @ LP2iB : Plateformes

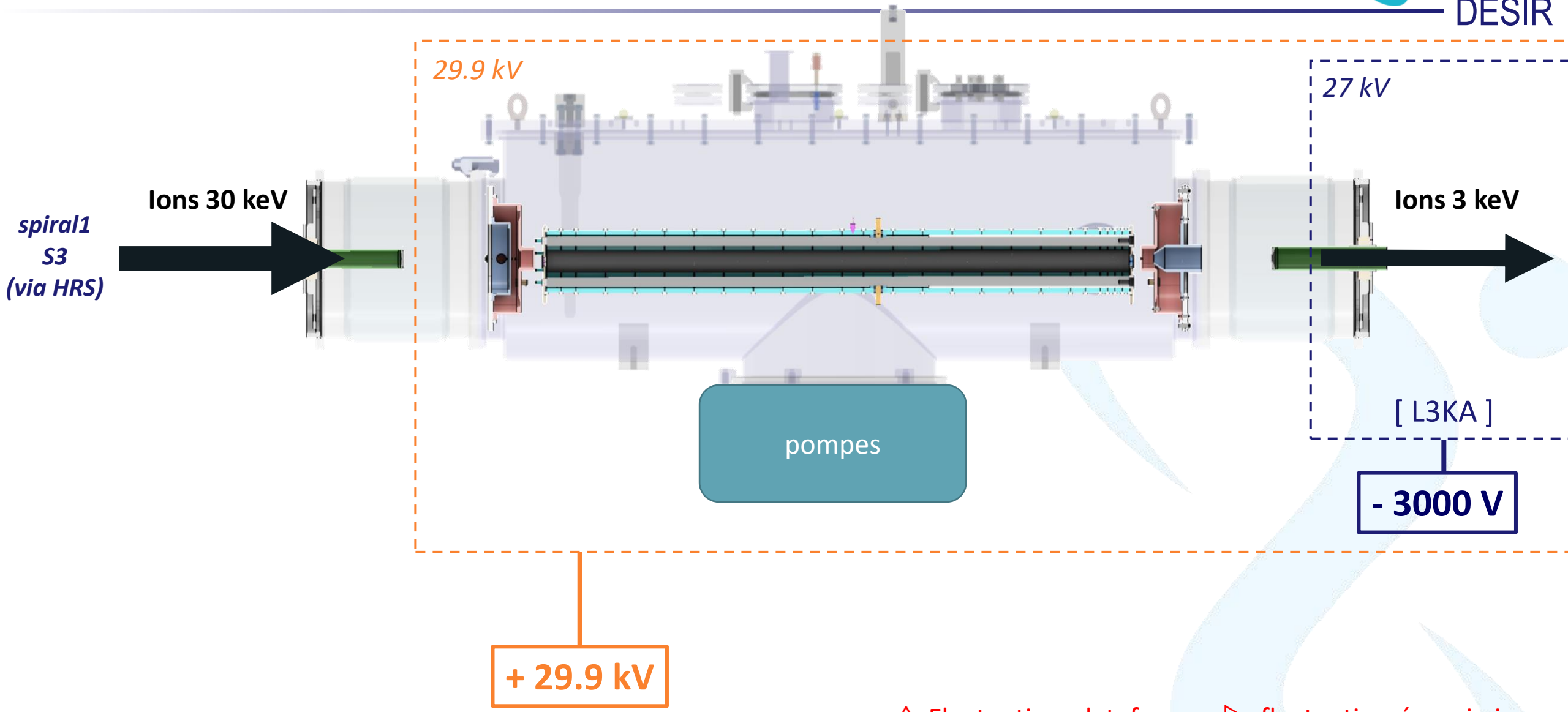


GPIB @ LP2iB : Plateformes



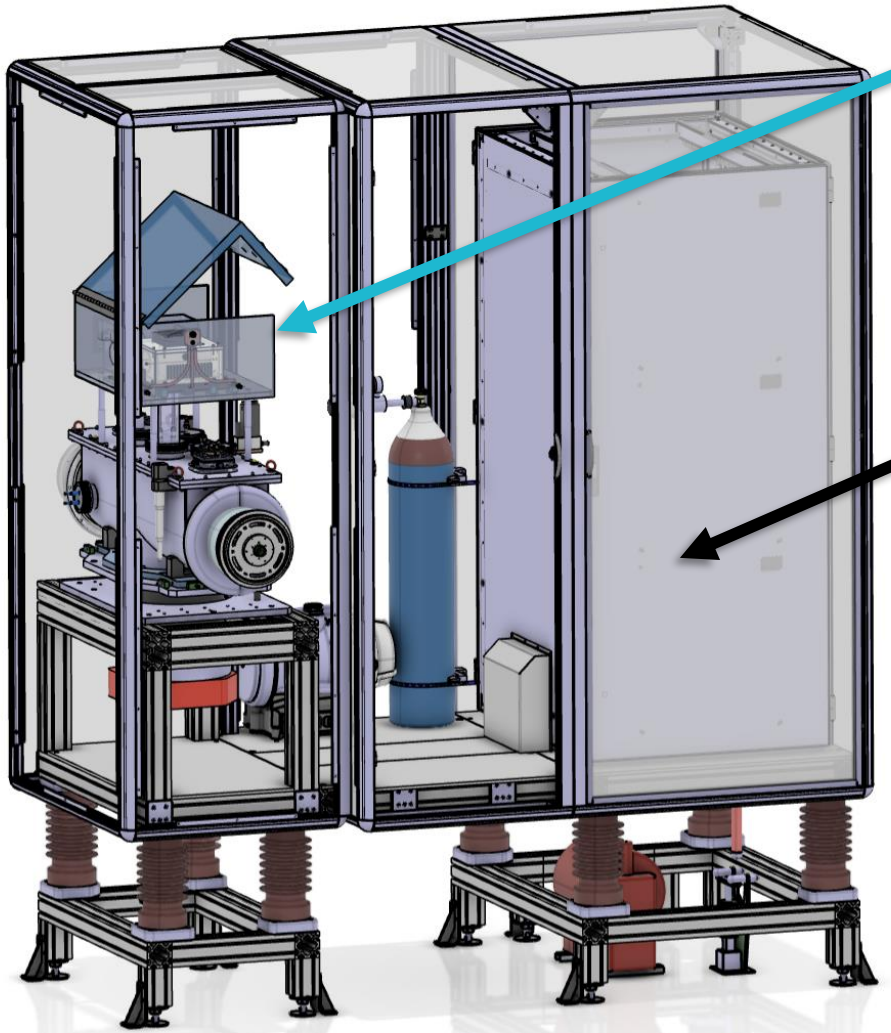
⚠ Fluctuation plateformes ▷ fluctuation énergie ions

GPIB @ DESIR : Plateformes



⚠ Fluctuation plateformes ▷ fluctuation énergie ions

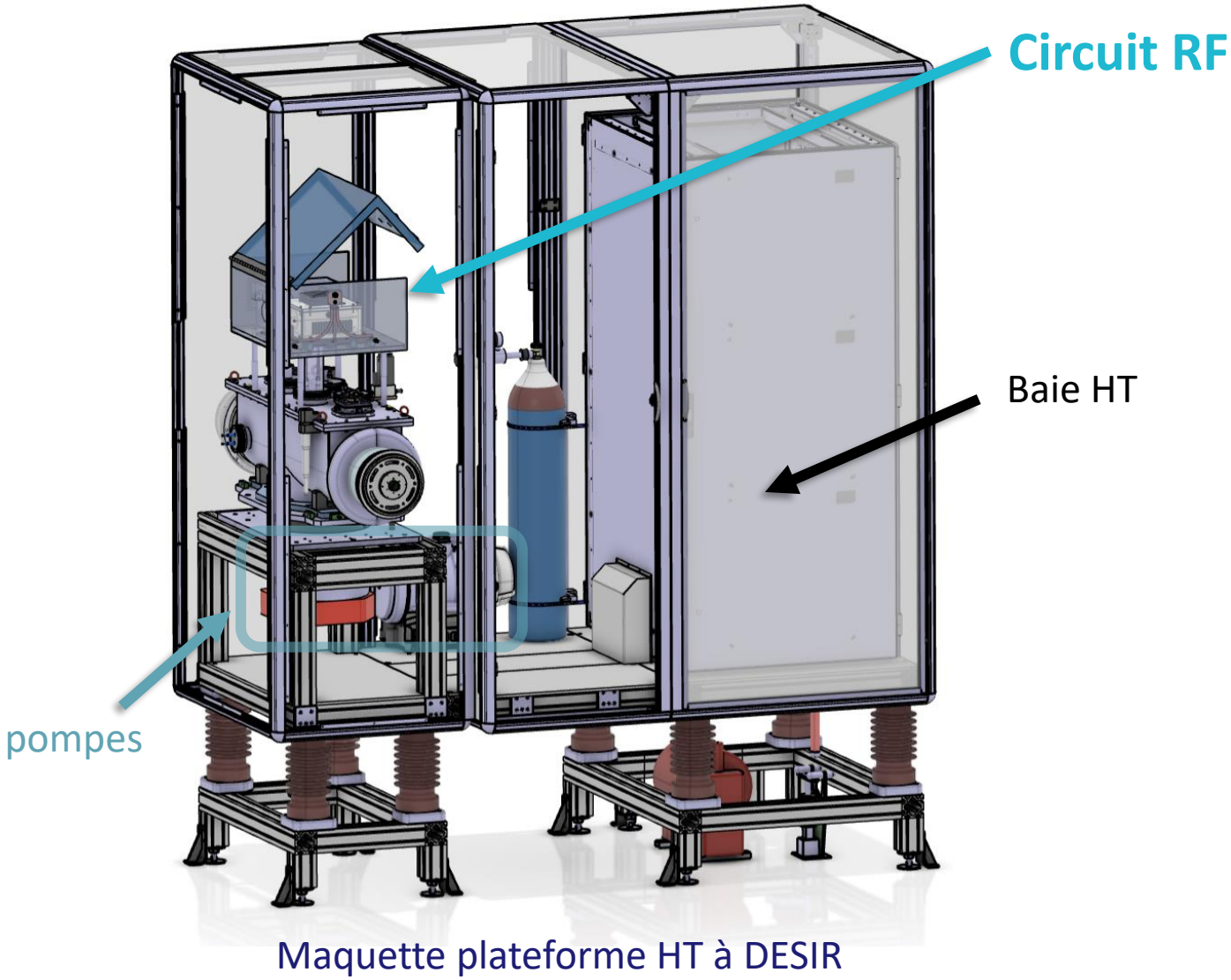
GPIB @ DESIR : Plateforme HT



Maquette plateforme HT à DESIR

- Tout sur la plateforme 30 kV

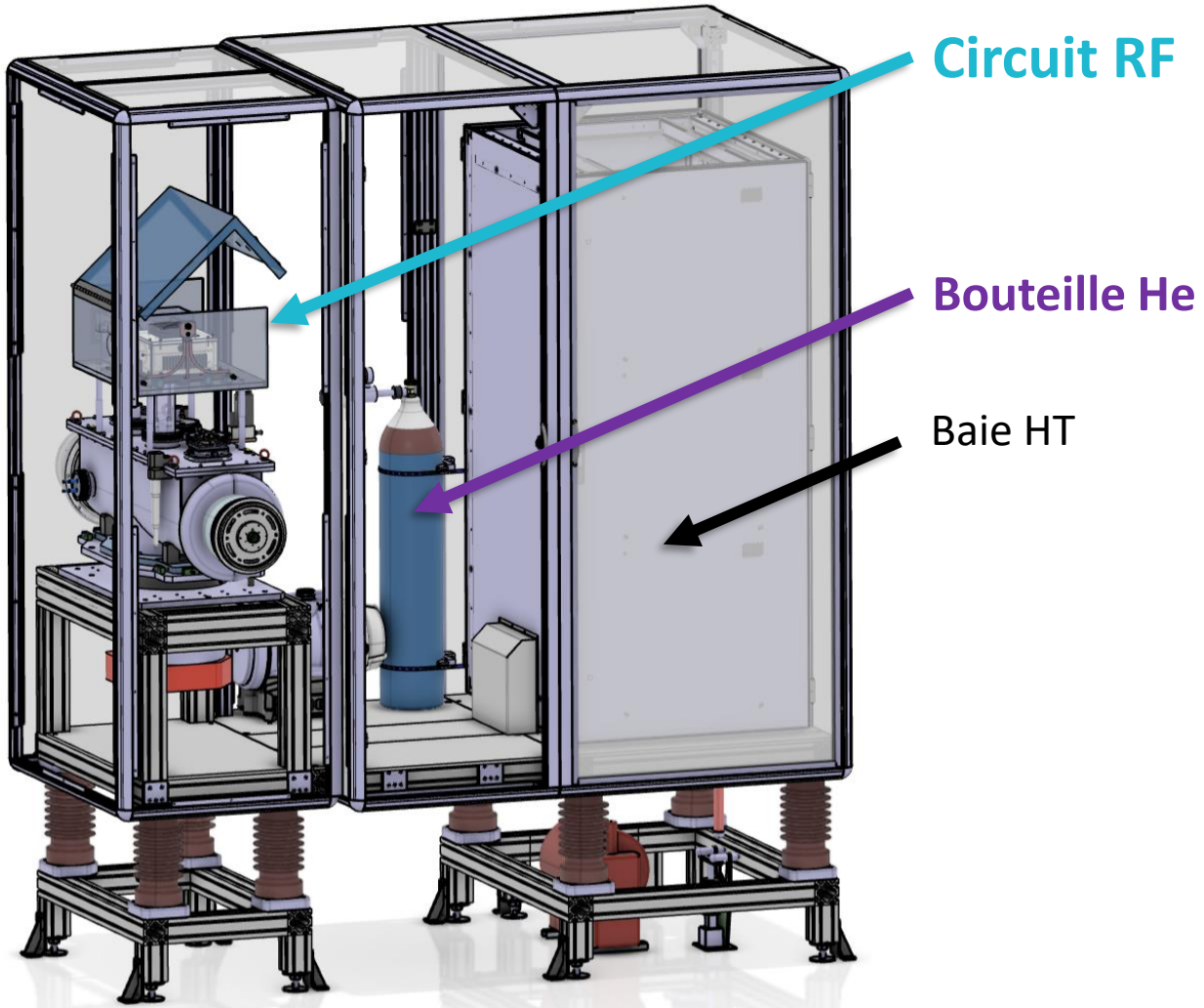
GPIB @ DESIR : pompage réduit



Maquette plateforme HT à DESIR

- Tout sur la plateforme 30 kV
  …y compris les pompes
- Refroidissement à l'eau à éviter
  -> pompe moins puissante
- Tests et simulations avec pompage réduit au LP2iB -> probablement OK
- Étude & proposition de solution par vidiste GANIL en cours

GPIB @ DESIR : purification He

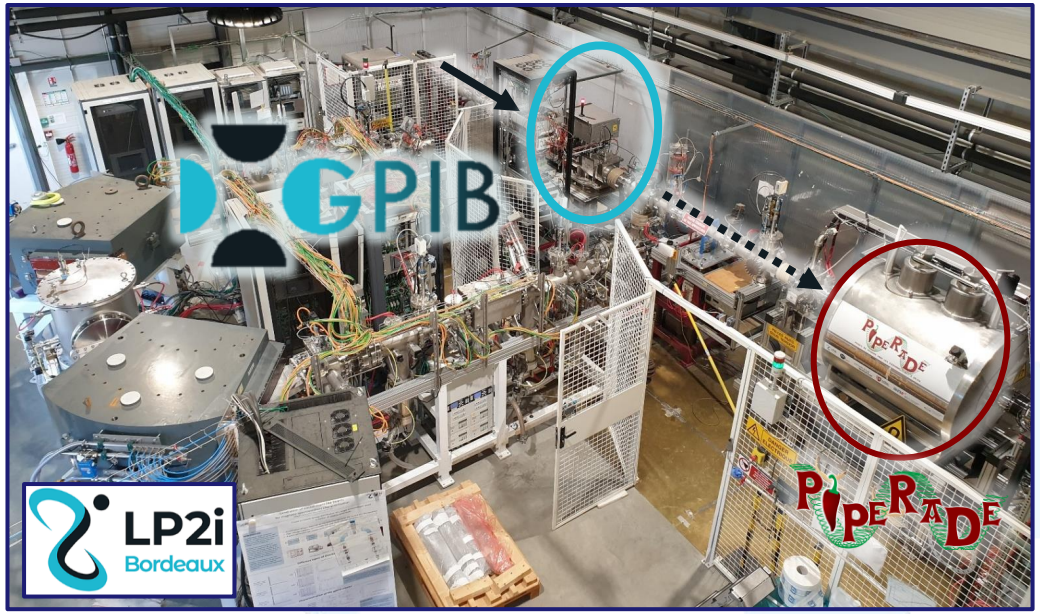


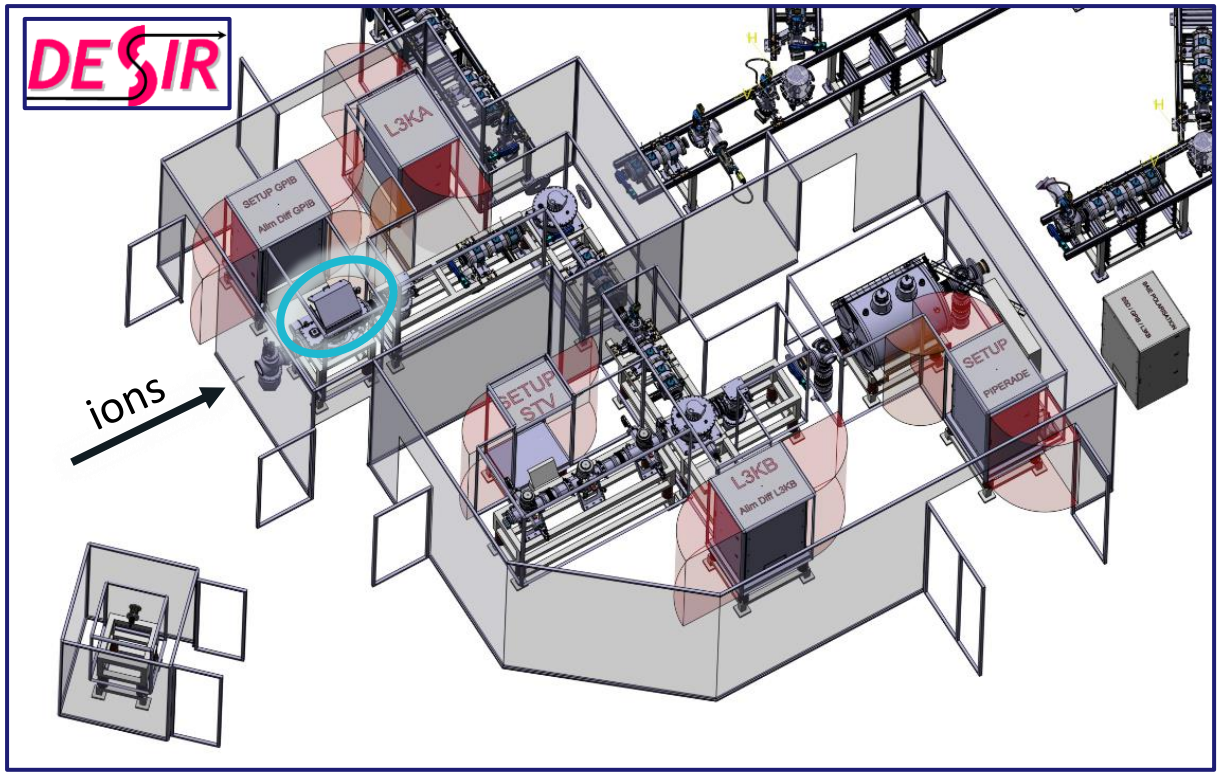
Maquette plateforme HT à DESIR

- Bouteille He 6.0
- Insuffisant pour le piégeage des éléments réactifs !
- Nécessite système de **purification** He (centralisé DESIR ou intégré plateforme ?)

Conclusion et surtout perspectives !

- Aujourd'hui : GPIB fonctionnel @LP2iB
- Fonctionnement **24/7**
- Fournit du faisceau bunché pour les tests PIPERADE



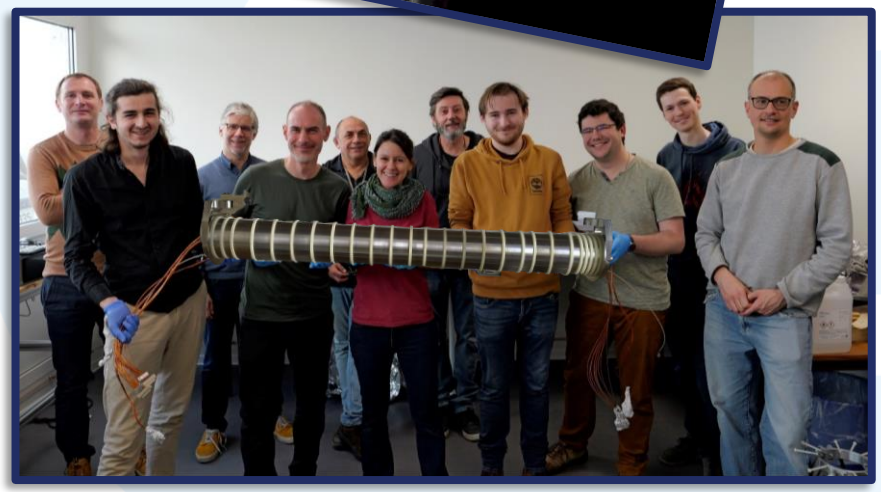


- Objectif visé : GPIB prêt à être transféré **fin 2026**
- Étude mécanique des **plateformes / châssis** GPIB finalisée ce mois-ci
- Mars : lancement fabrication puis **montage** @LP2iB
- Instrumentation/Automatisme/Contrôle-Commande similaire au RFQ1P LPC Caen *(en cours)*

Merci pour votre attention !

Équipe GPIB-PIPERADE

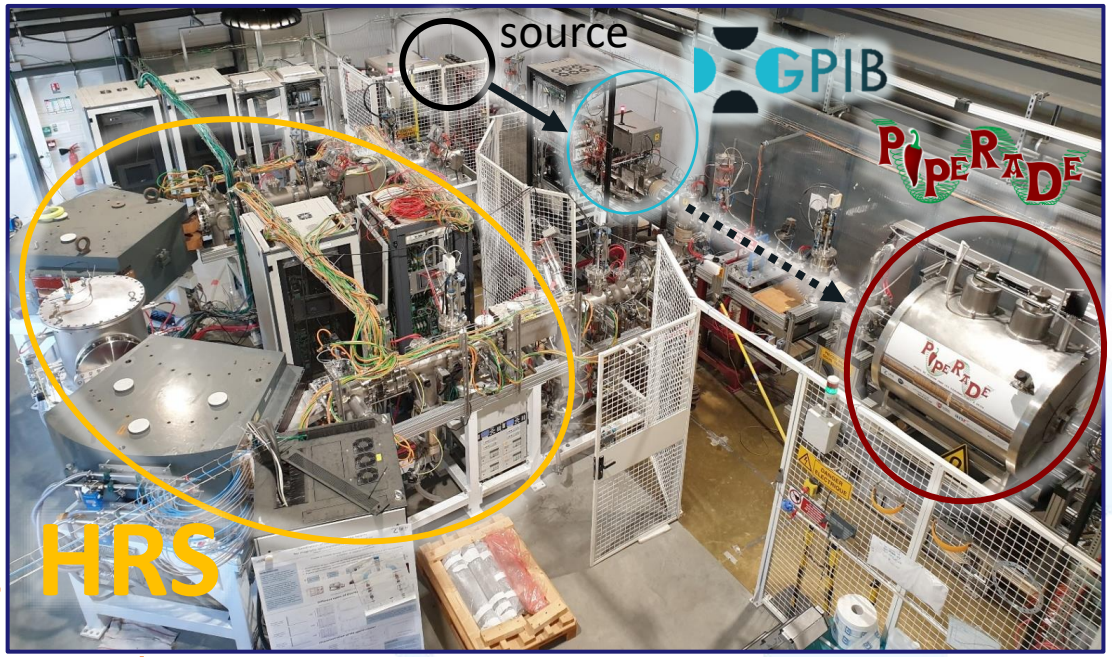
P. Alfaurt, P. Ascher, D. Atanasov, A. Balana, B. Blank, L. Daudin, M. Flayol, M. Gerbaux, S. Grévy, G. Guignard, M. Hukkanen, A. Husson, G. Jevelot, B. Lachacinski, S. Lechner, S. Perard, E. Rey-herme, M. Roche, A. de Roubin, C. Roumegou

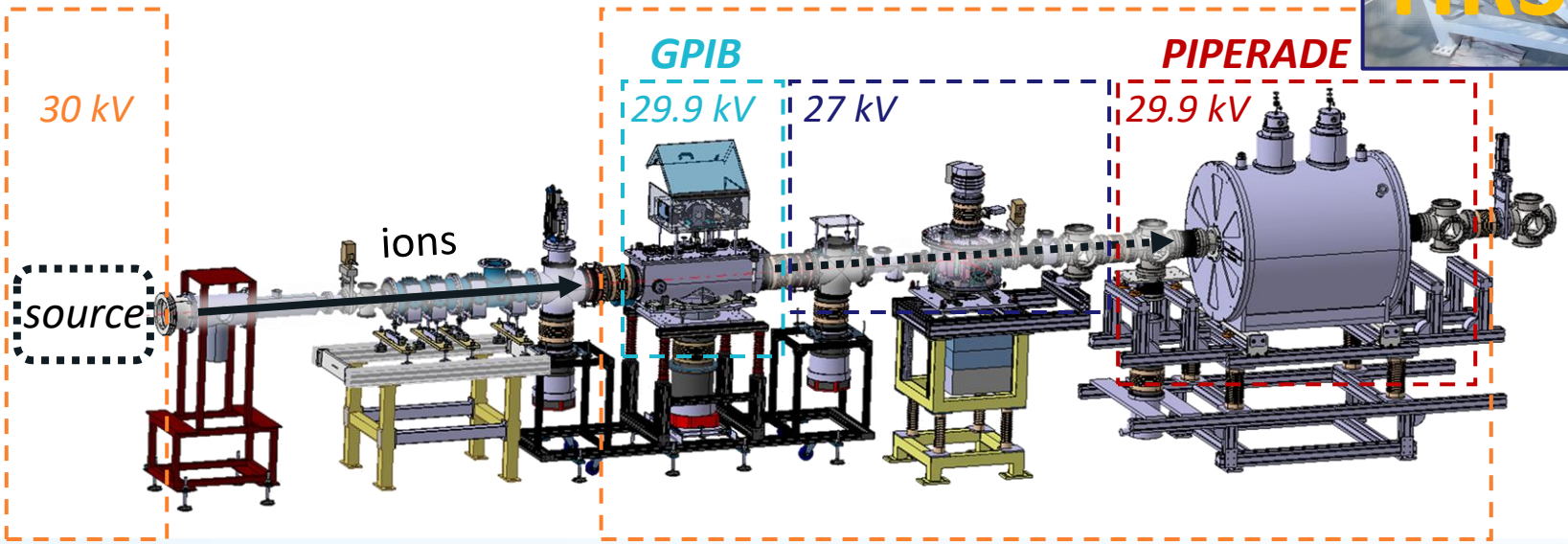


SLIDES BACKUP

Hall expérimental @ LP2iB

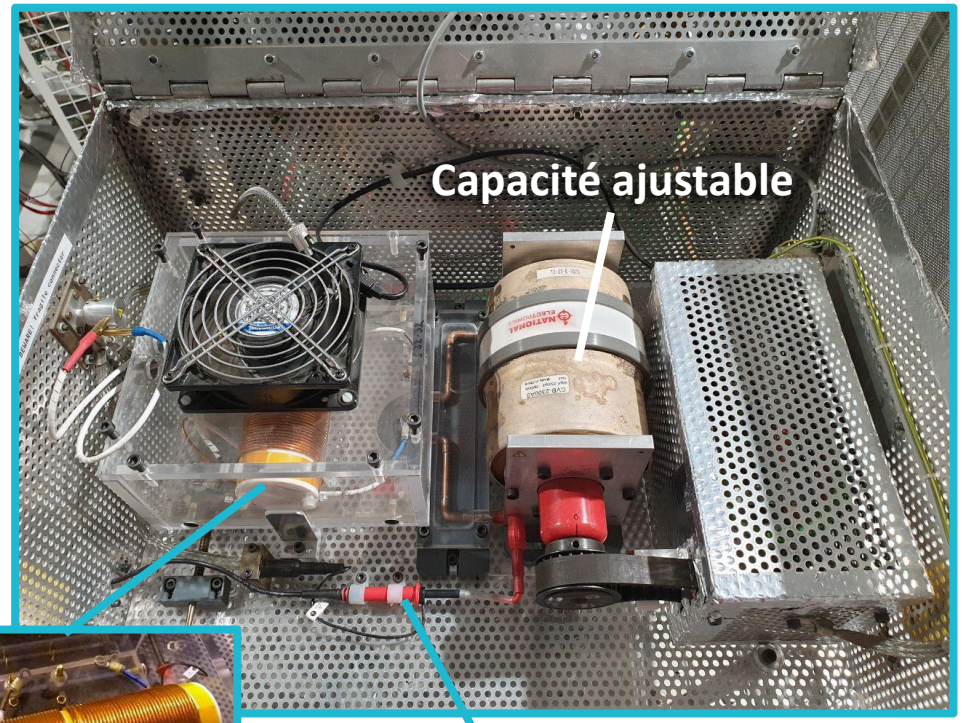
GPIB @ LP2i Bordeaux

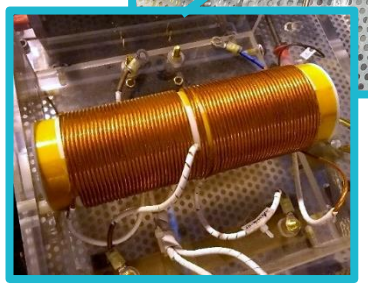




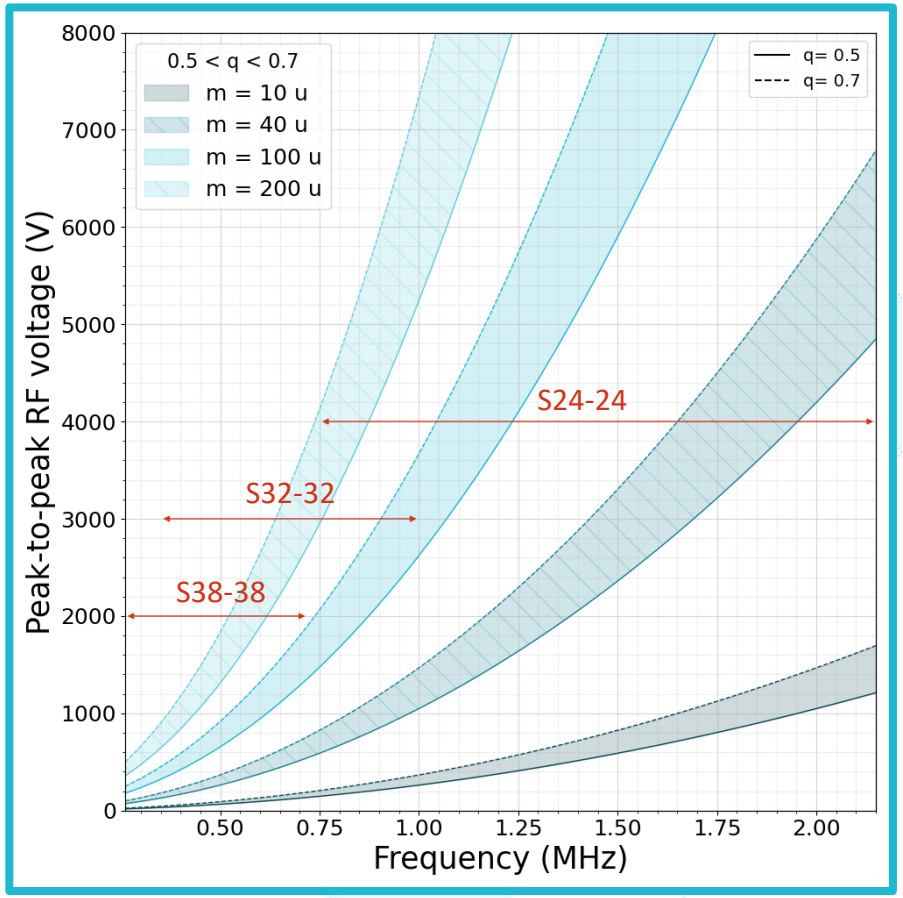
Circuit RF

Circuit Balun

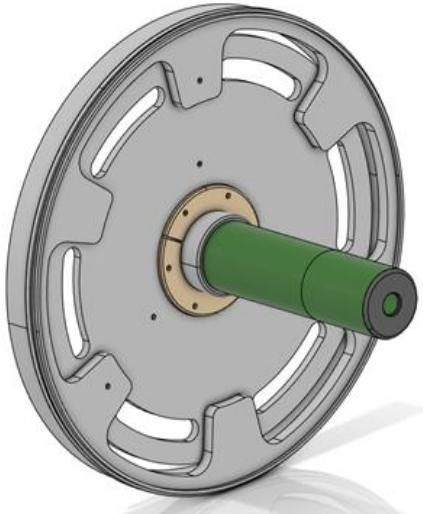




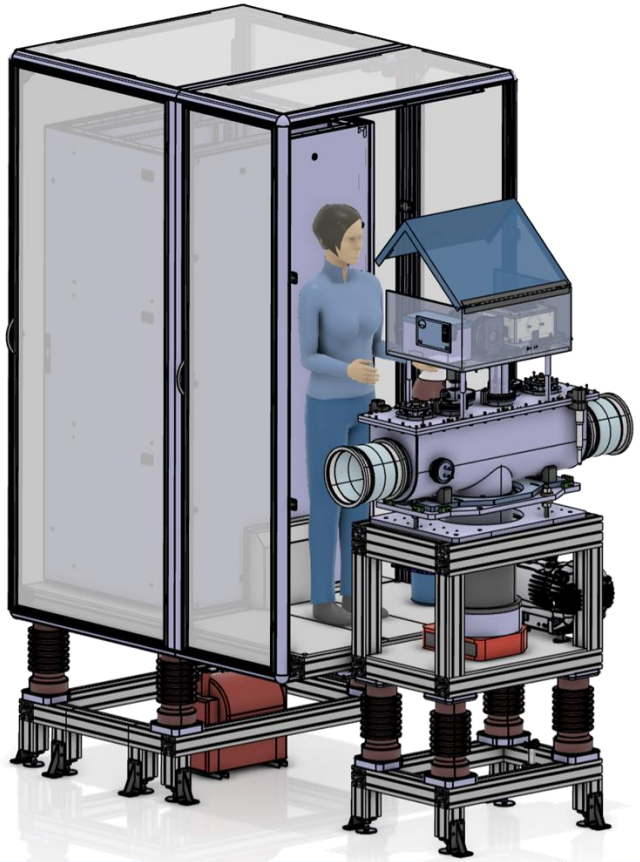
Bobinage S32-32
(échangeable)

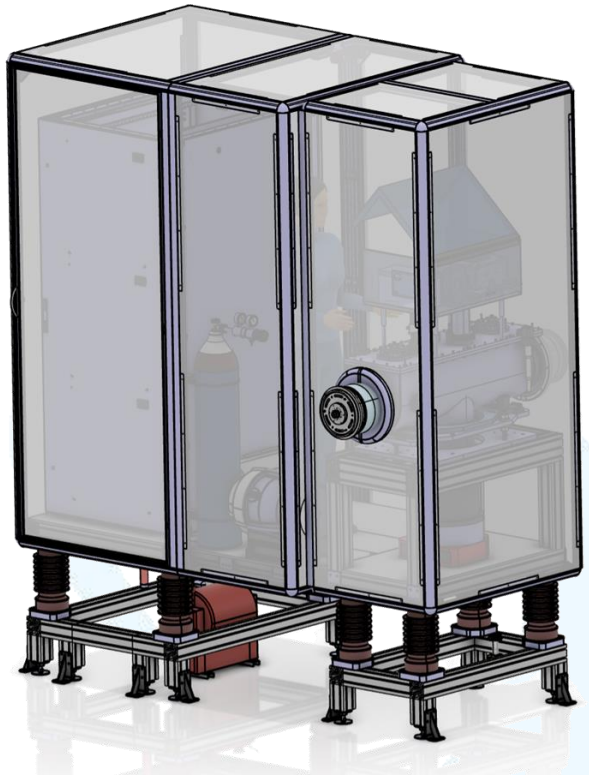


GPIB @ DESIR : Mécanique



Nouvelles électrodes d'injection et extraction





Plateforme HT DESIR

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