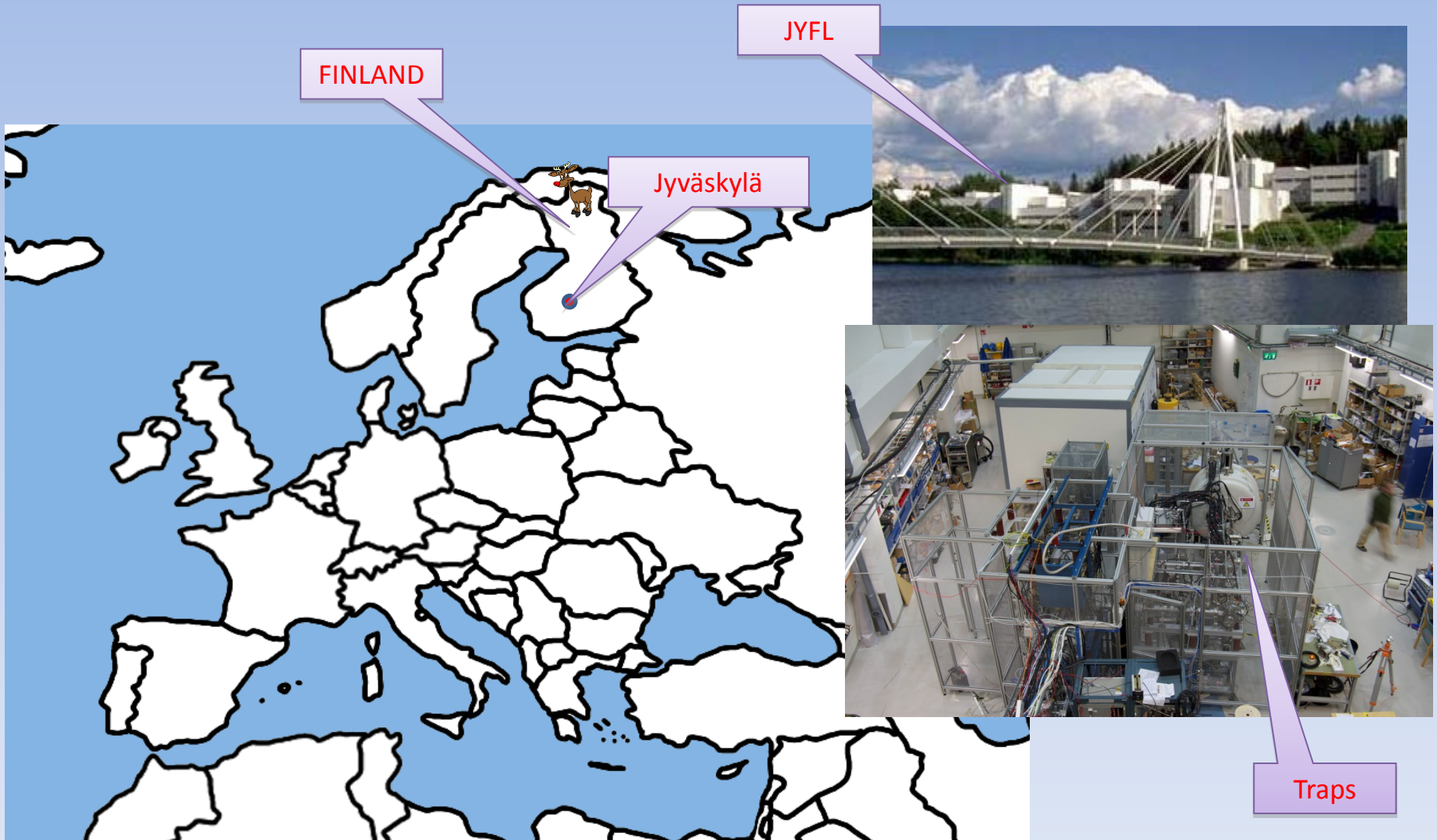


JYFLTRAP STATUS REPORT

JYFLTRAP?

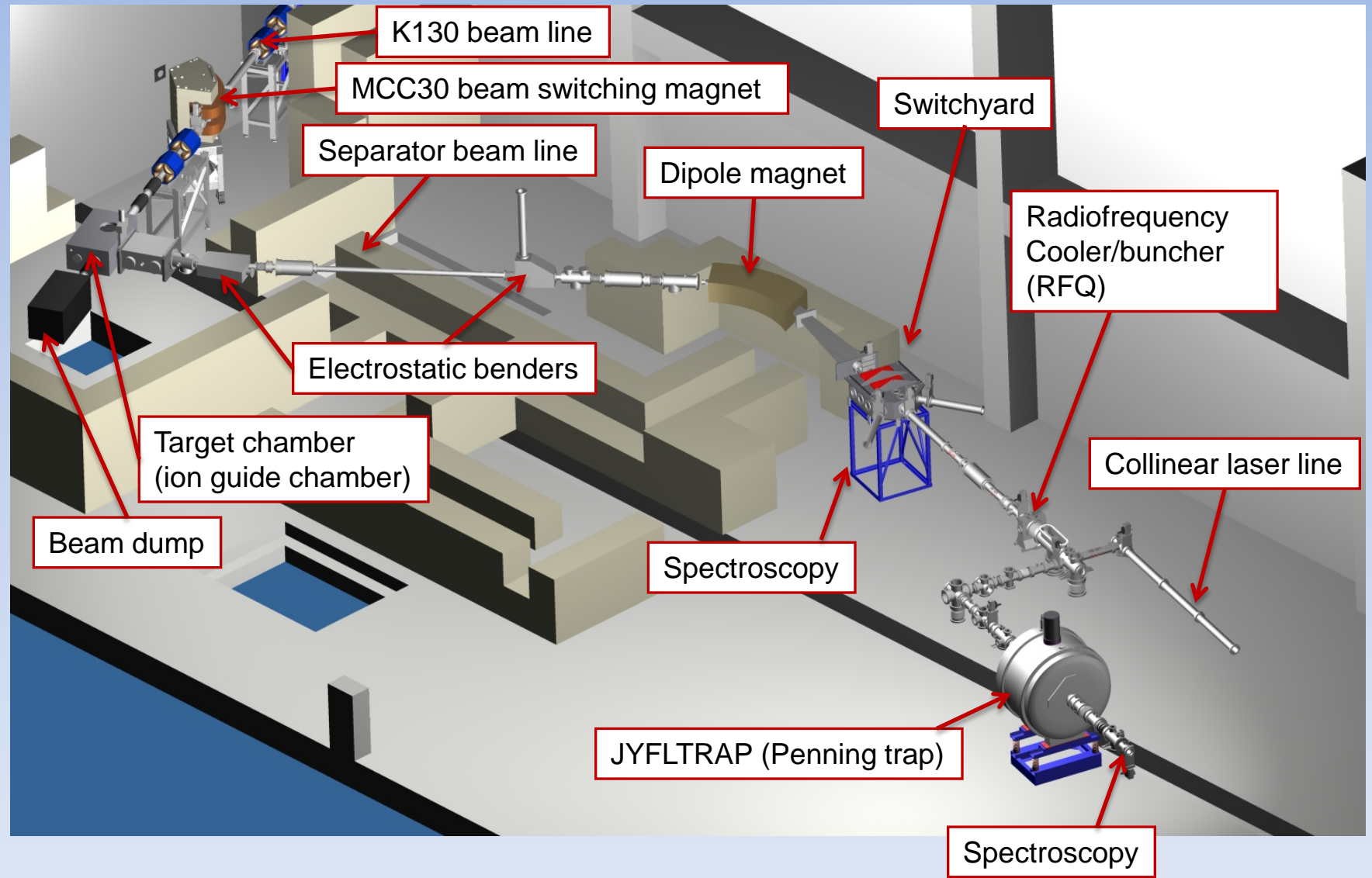


The image features a map of Europe with three callout boxes: 'FINLAND' pointing to the northern part of the continent, 'Jyväskylä' pointing to a specific location in Finland, and 'JYFL' pointing to a photograph of a modern building complex. Below the map is a photograph of a laboratory interior with several metal cages labeled 'Traps'. A callout box labeled 'Traps' points to these cages.

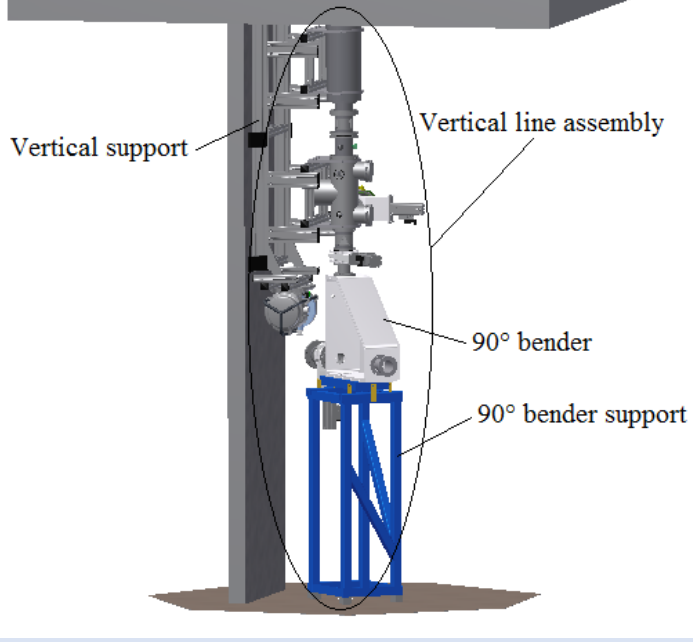
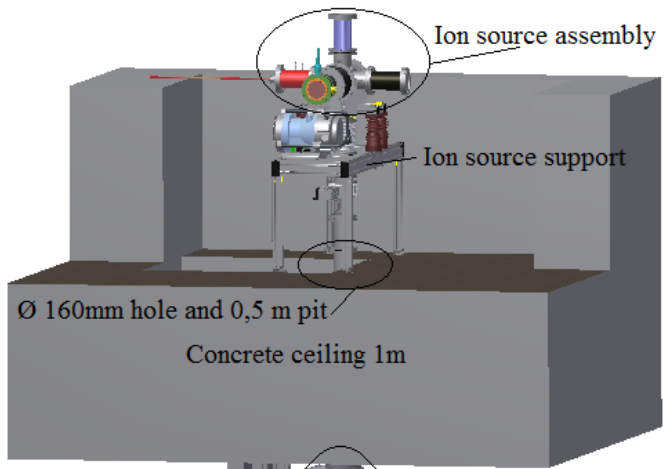
OUTLINE

- Overview
- Vertical line & test ion sources
- Switchyard
- RFQ cooler/buncher
- Connecting beam line (drift tube)
- Superconducting magnet
- Penning traps
- Xe implantation
- Spectroscopy

IGISOL AT NEW LAB



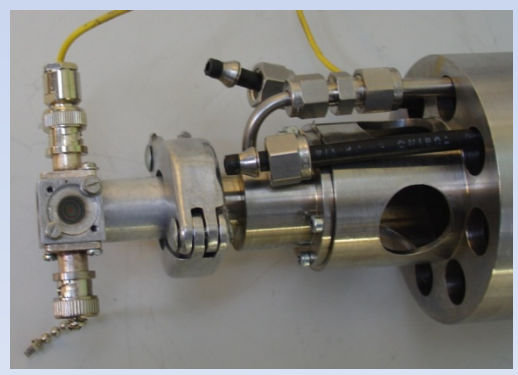
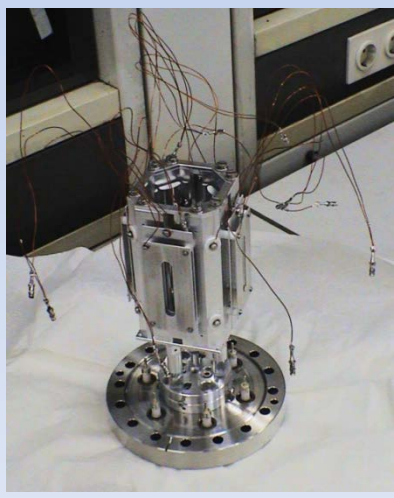
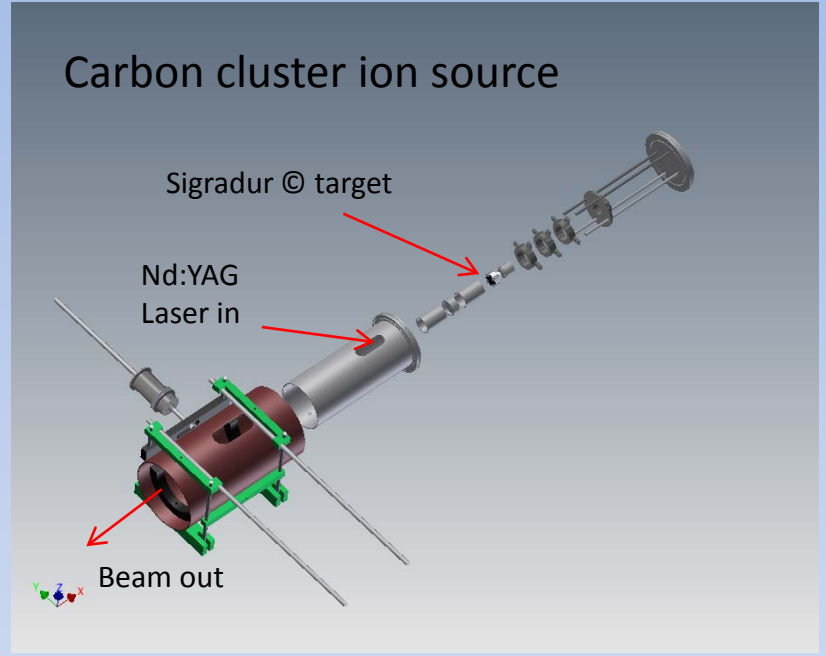
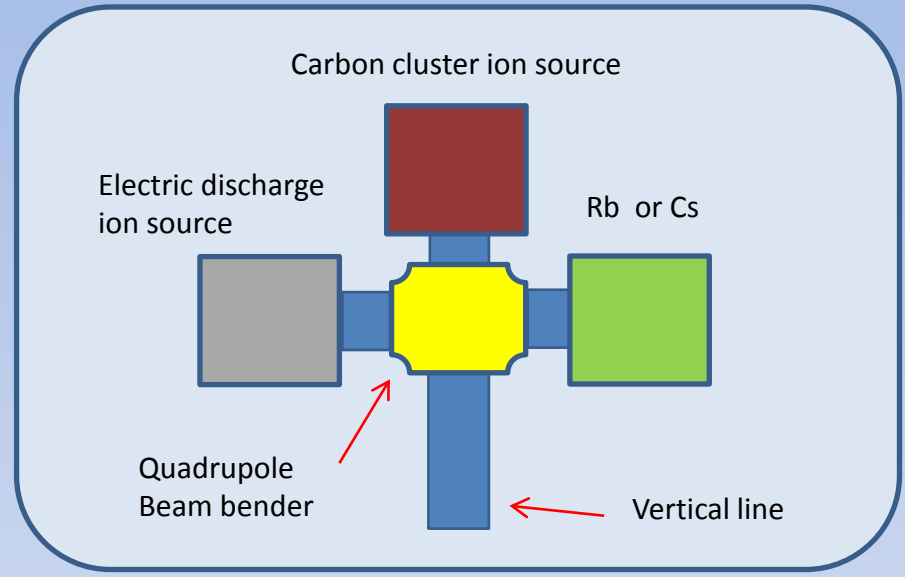
VERTICAL LINE



Diploma work of
Kari Rytkönen

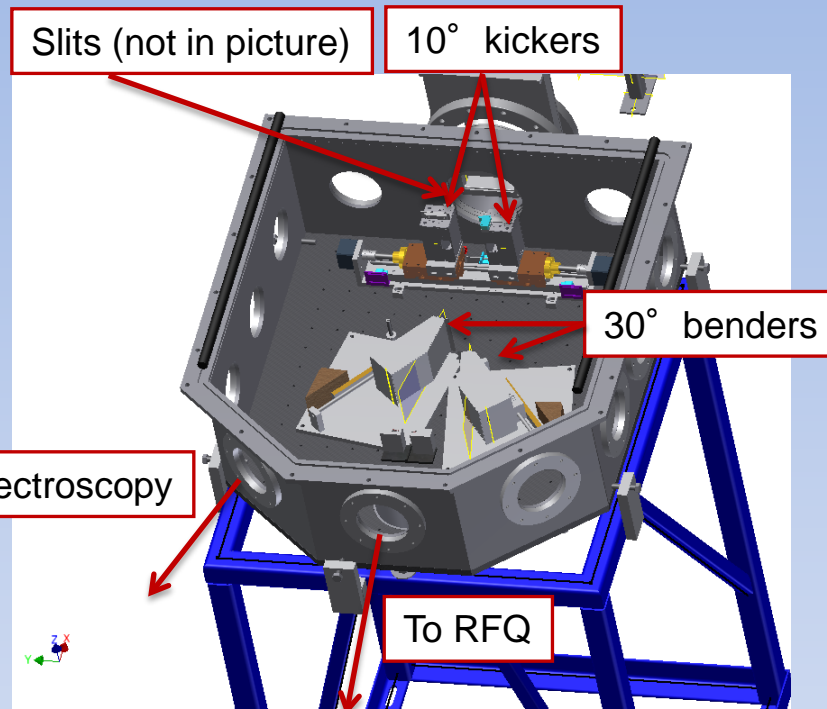
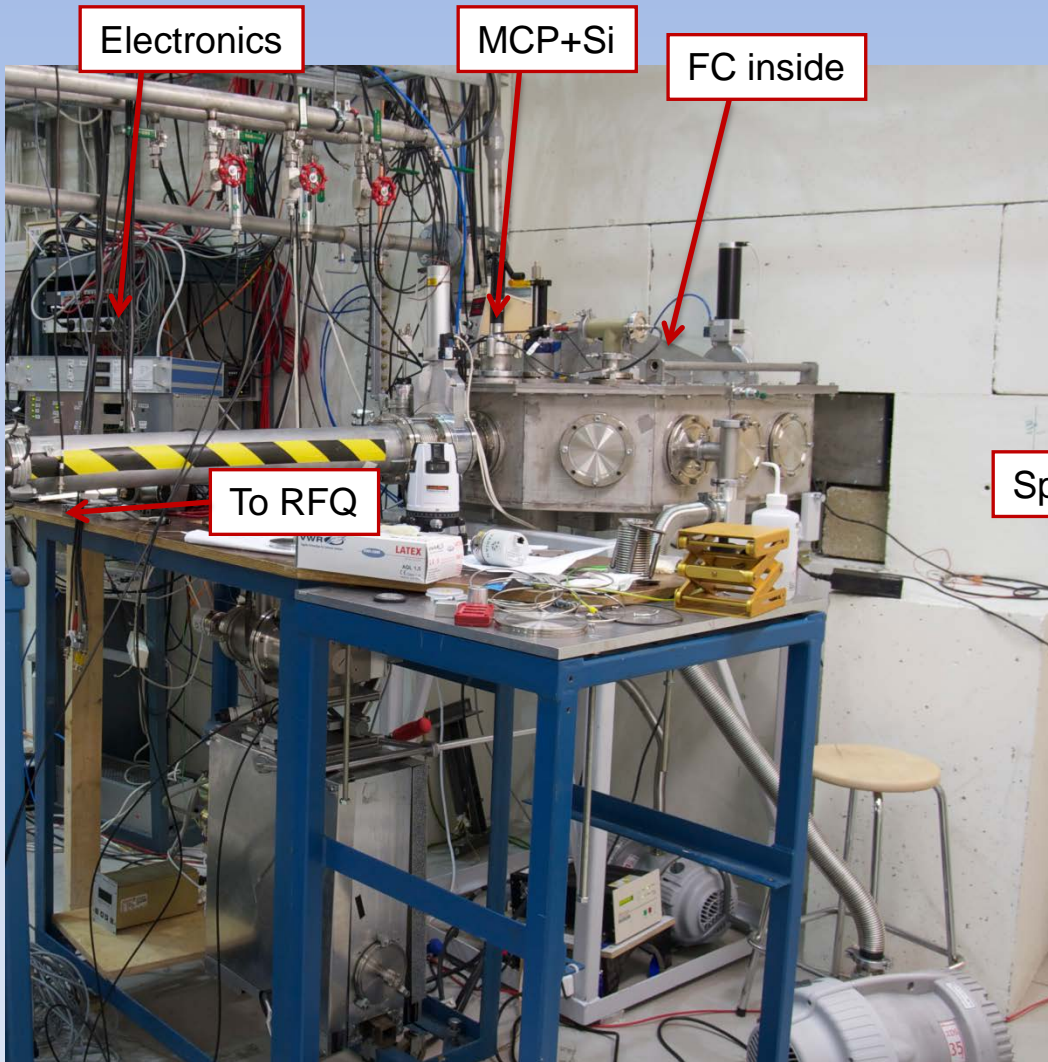


TEST ION SOURCES



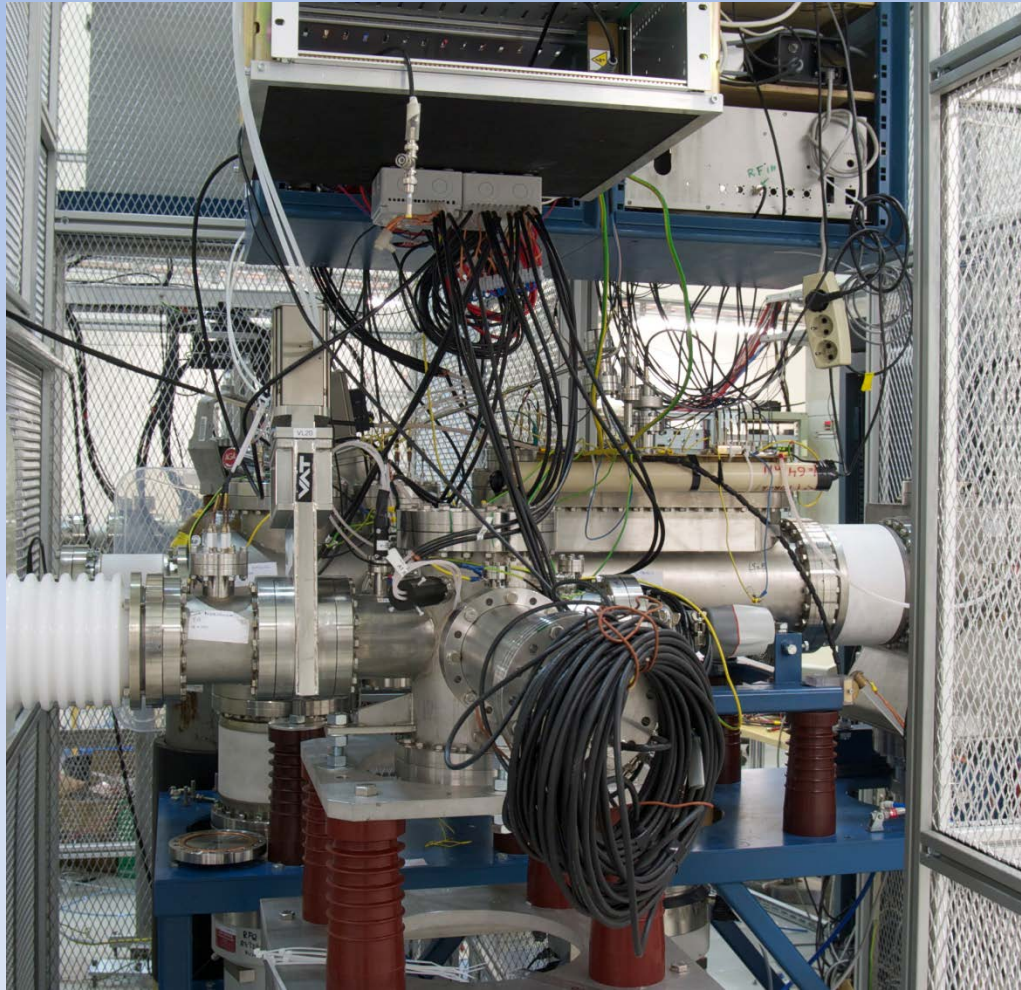
+ possibly Rb & Cs ions

SWITCHYARD



- 3 lines out, 0°, -40° and +40°
- 10° kicker + 30° bender
- Right and central line has been used so far

RFQ COOLER/BUNCHER

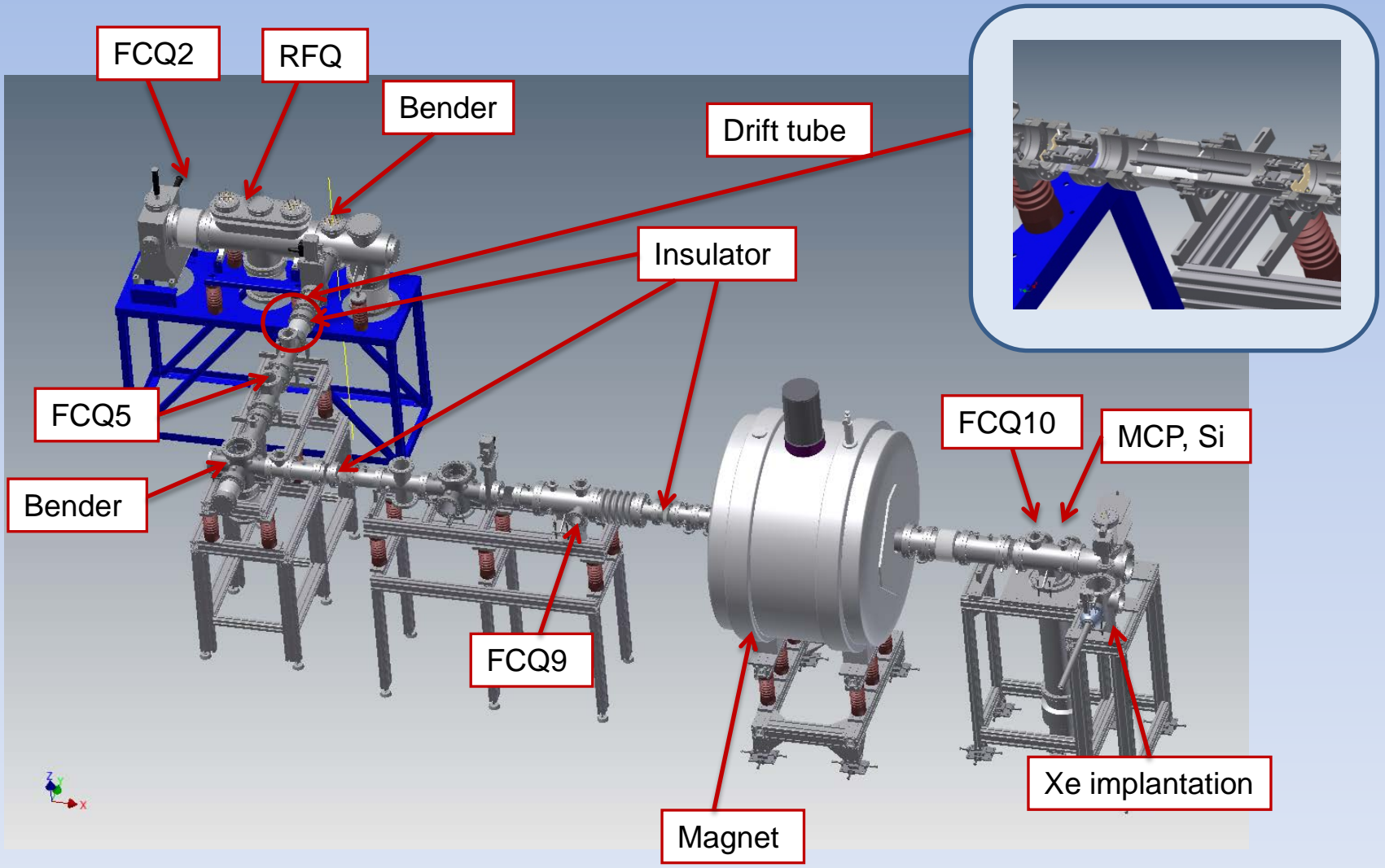


Cooler is operational:

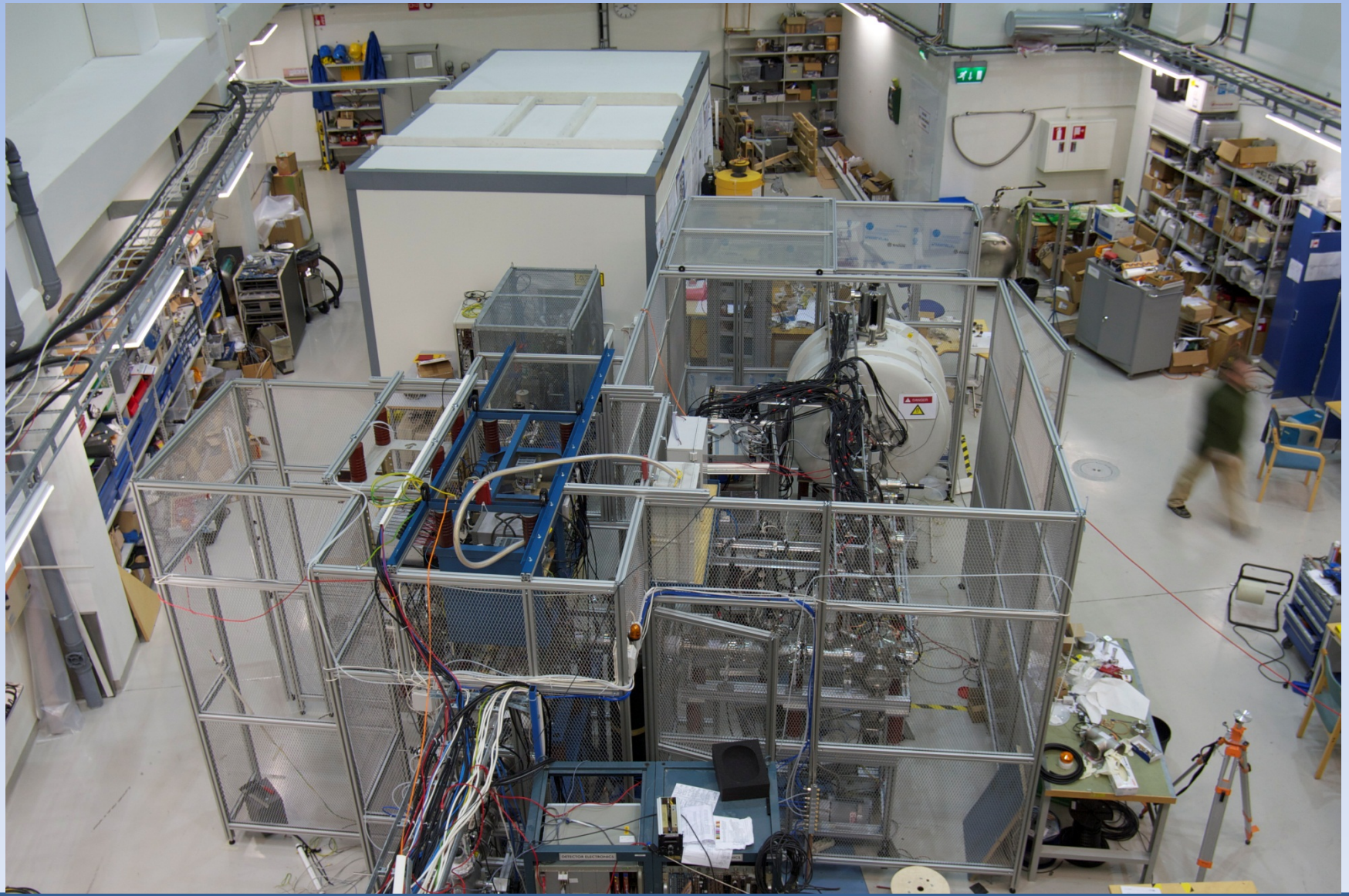
- $U=30$ kV
- Transmission efficiency: 66% for ^{63}Cu , cooled beam and bend towards trap line (10 nA/15nA, slits 1 cm open in switchyard)



RFQ TO TRAP BEAM LINE



RFQ TO TRAP BEAM LINE



7-T MAGNET

Magnet

Measurement

trap

$$\frac{\Delta B}{B} = 0.28 \text{ ppm}$$

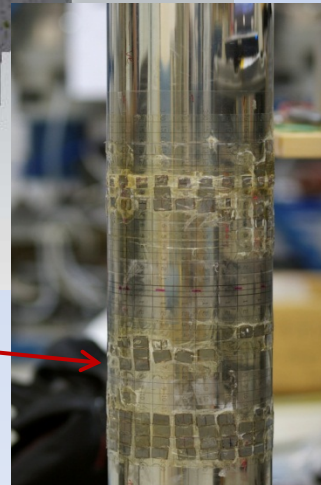
- Magnet energized and shimmed
- Beam tube aligned along the magnetic field

Purification

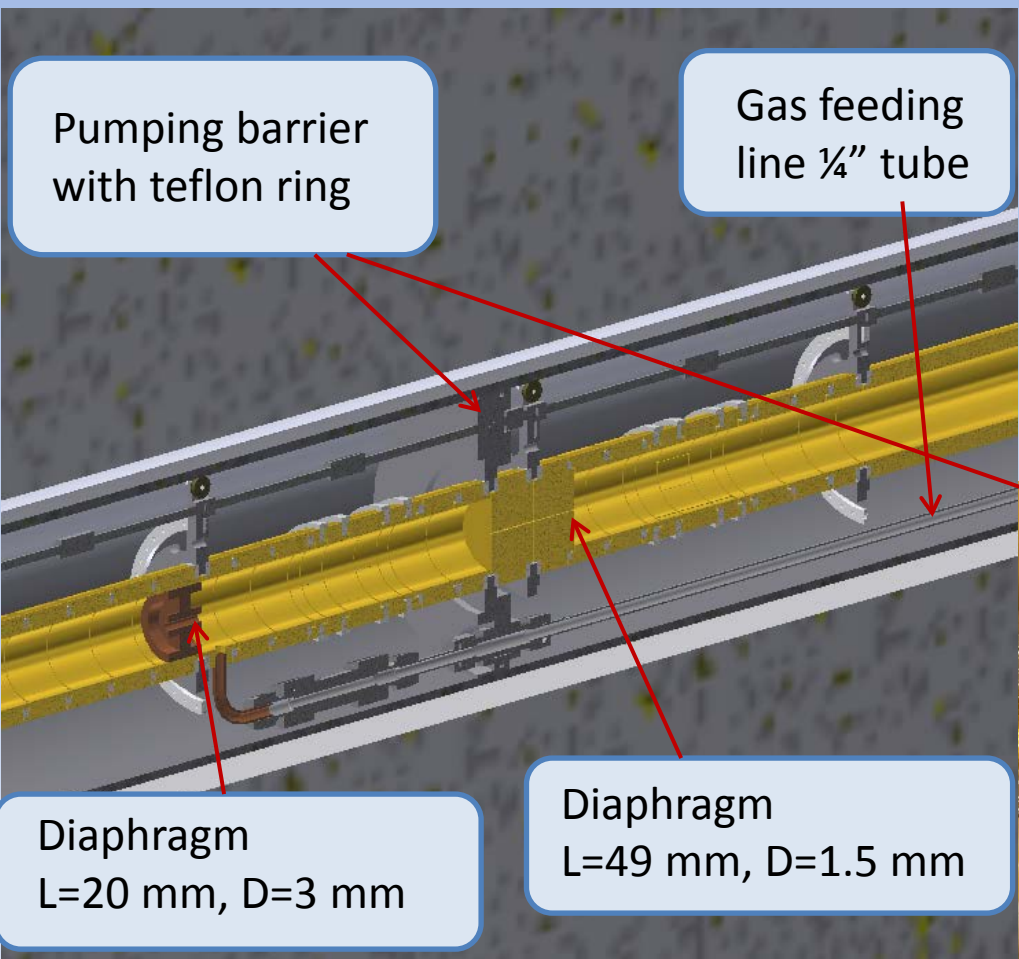
trap

$$\frac{\Delta B}{B} = 1.57 \text{ ppm}$$

Shimming tube



PENNING TRAPS



- New pumping barrier
- New gas line ¼" tube
- Traps rewired
- New diaphragms
- Traps in vacuum



TRANSPORT EFFICIENCIES

I(FCQ2)=15 nA (30 keV)
I(FCQ5)= 10 nA (30 keV)
I(FCQ5)= 3 nA (800 eV)
I(FCQ9)= 0.44 nA (800 eV)
I(FCQ10)=x nA (30 keV)

Cooler efficiency 66%

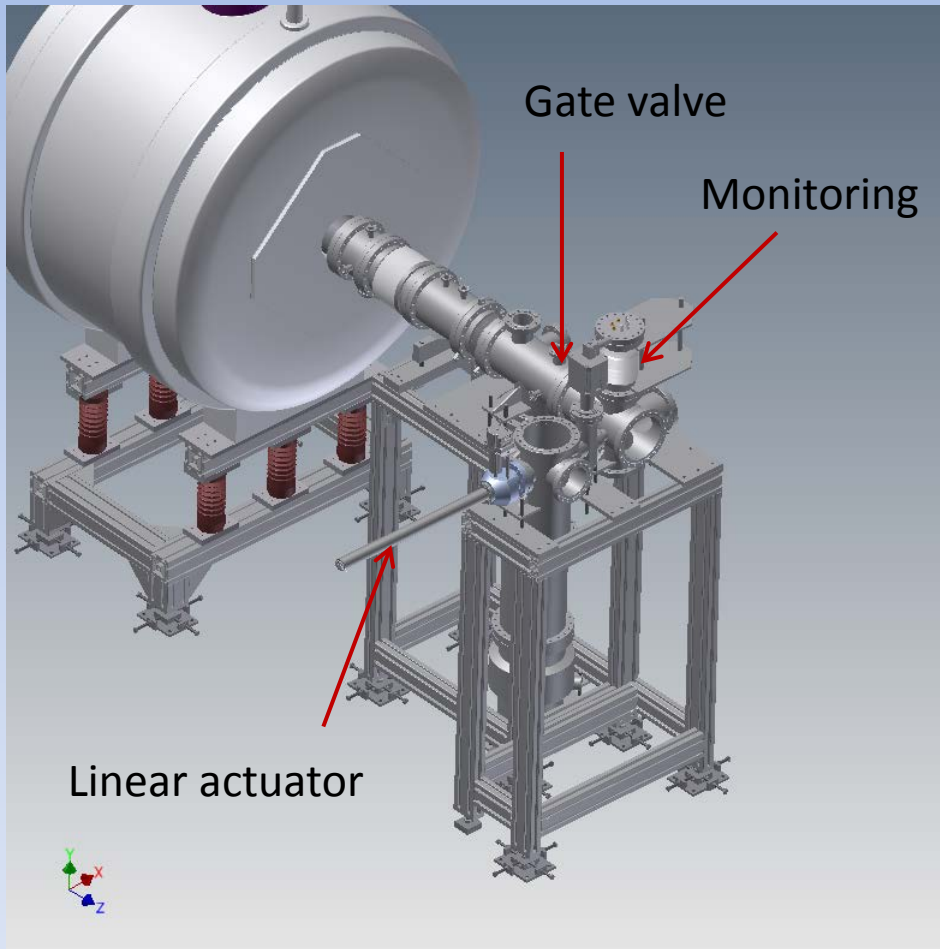


Trap line efficiency 15%

Not enough spark source time for the trap



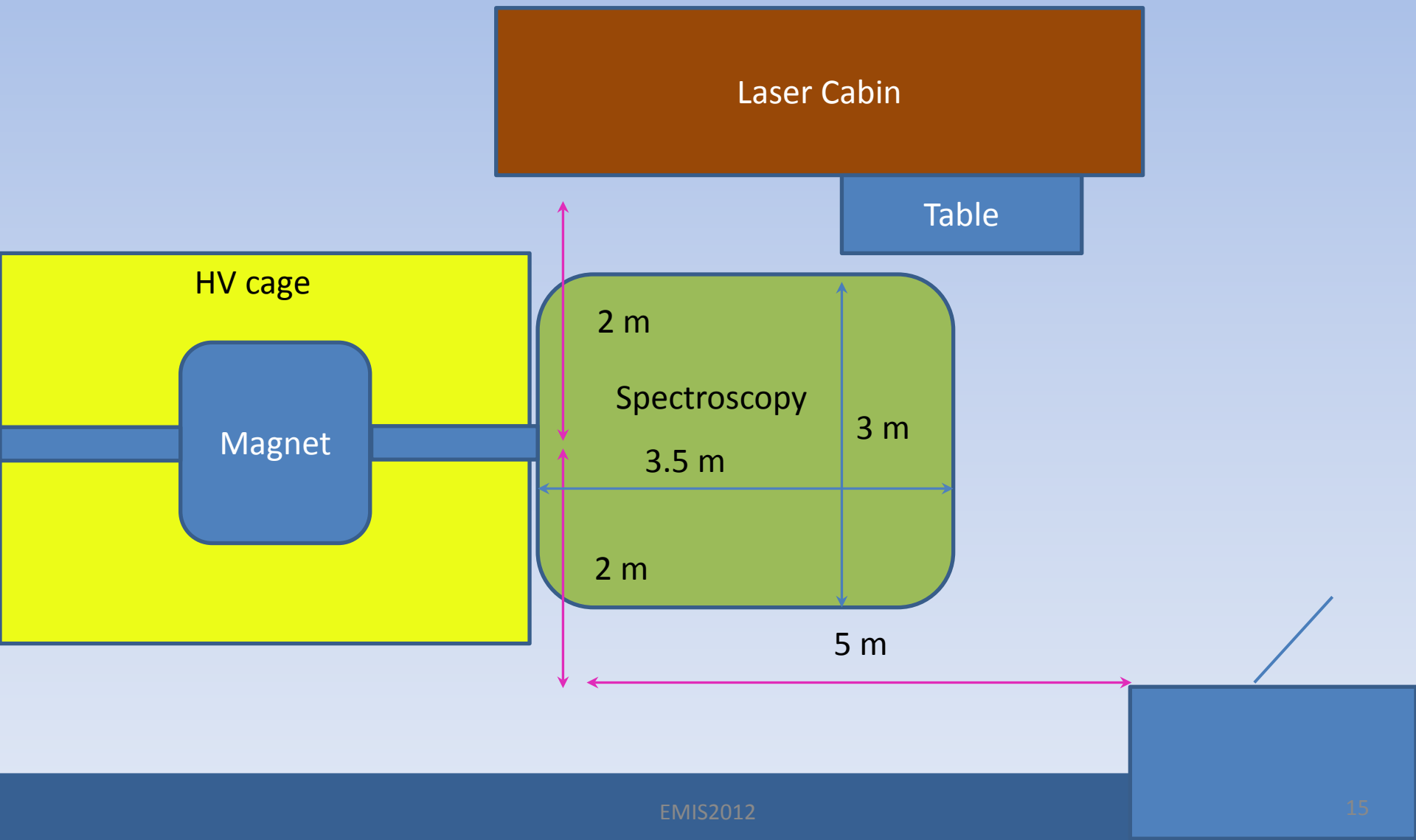
XE IMPLANTATION



- Production of Xe samples for Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO)
- Collaboration with STUK
- Ramsey cleaning + implantation
- New implantation chambers are being manufactured



SPECTROSCOPY



TEAM IGISOL

