I E M CSIC
Grupo de Física Nuclear Experimental

TRIμP @ HIE-ISOLDE

Dual magnetic Spectrometer coupled to MiniBall

&

MAGISOL Si-Plugin for the Isolde Decay Station

Olof TENGBLAD

MAGISOL April 2014

Zero-degree spectrometer @ HIE-Isolde

Workshop in LUND March 2011 where it was expressed a strong interest for having a Zero- degree spectrometer coupled to HIE-ISOLDE.

What would an ideal zero-degree device achieve?

- identification of reaction products

- physical separation of reaction products ←→ beam
- physical separation of reaction products ←→ fusion-evaporation

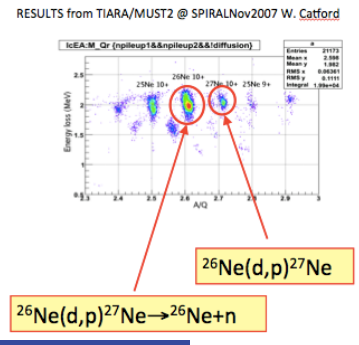
- physical separation of isobaric beams or other beam contaminants

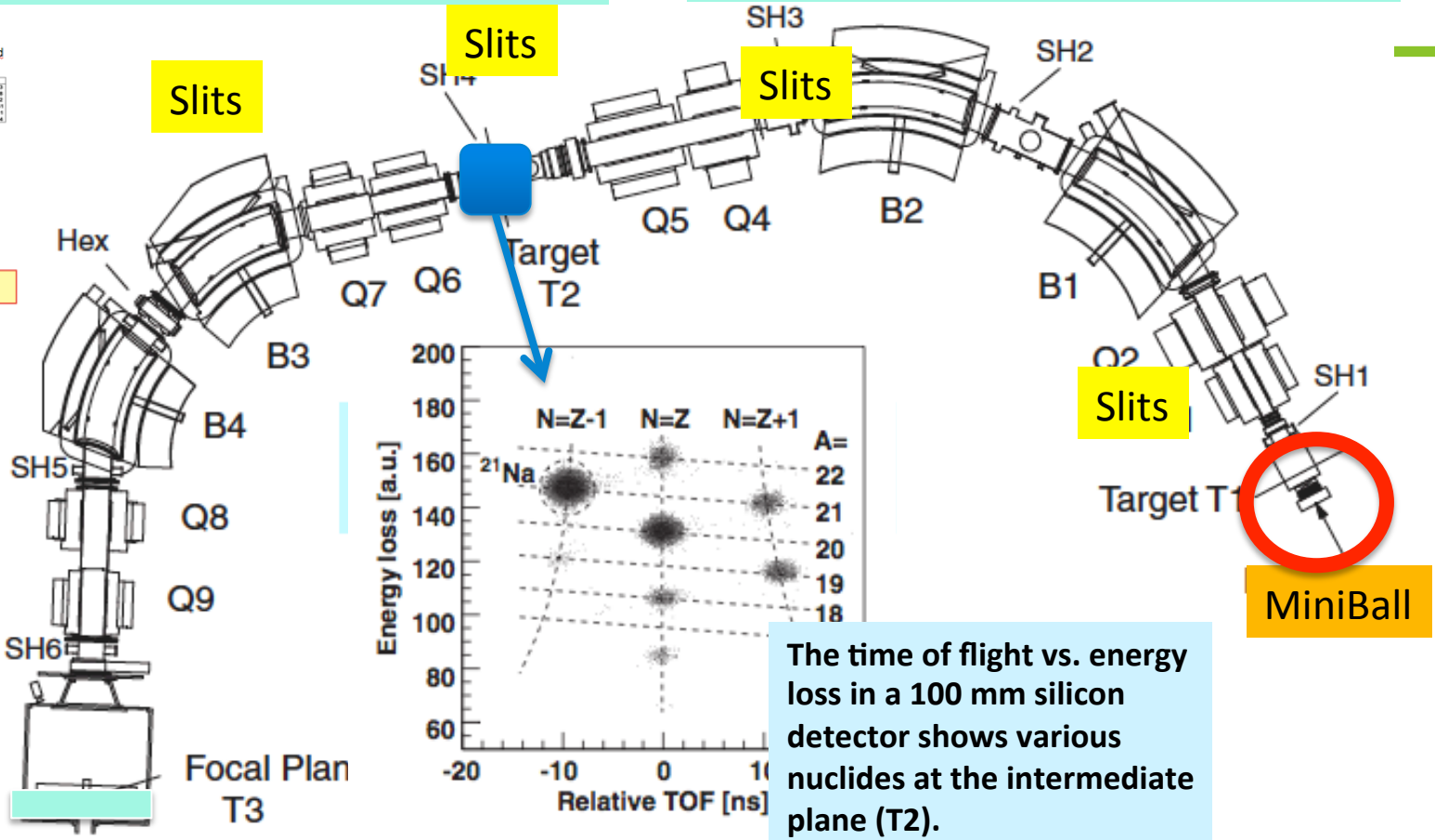
- large enough angular acceptance to pick up sequential decay products

- excellent angular resolution to allow kinematic reconstruction – *missing-p*

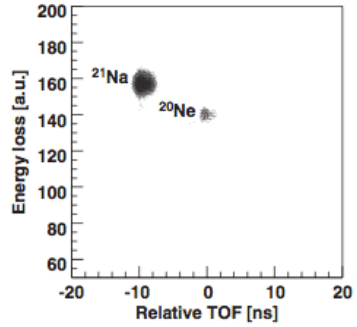
TRIμP SEPARATOR

$^{21}Ne^{7+}$ @ 43 MeV/u on 20 mg/cm^2 polyethylen





The time of flight vs. energy loss in a 100 mm silicon detector shows various nuclides at the intermediate plane (T2).

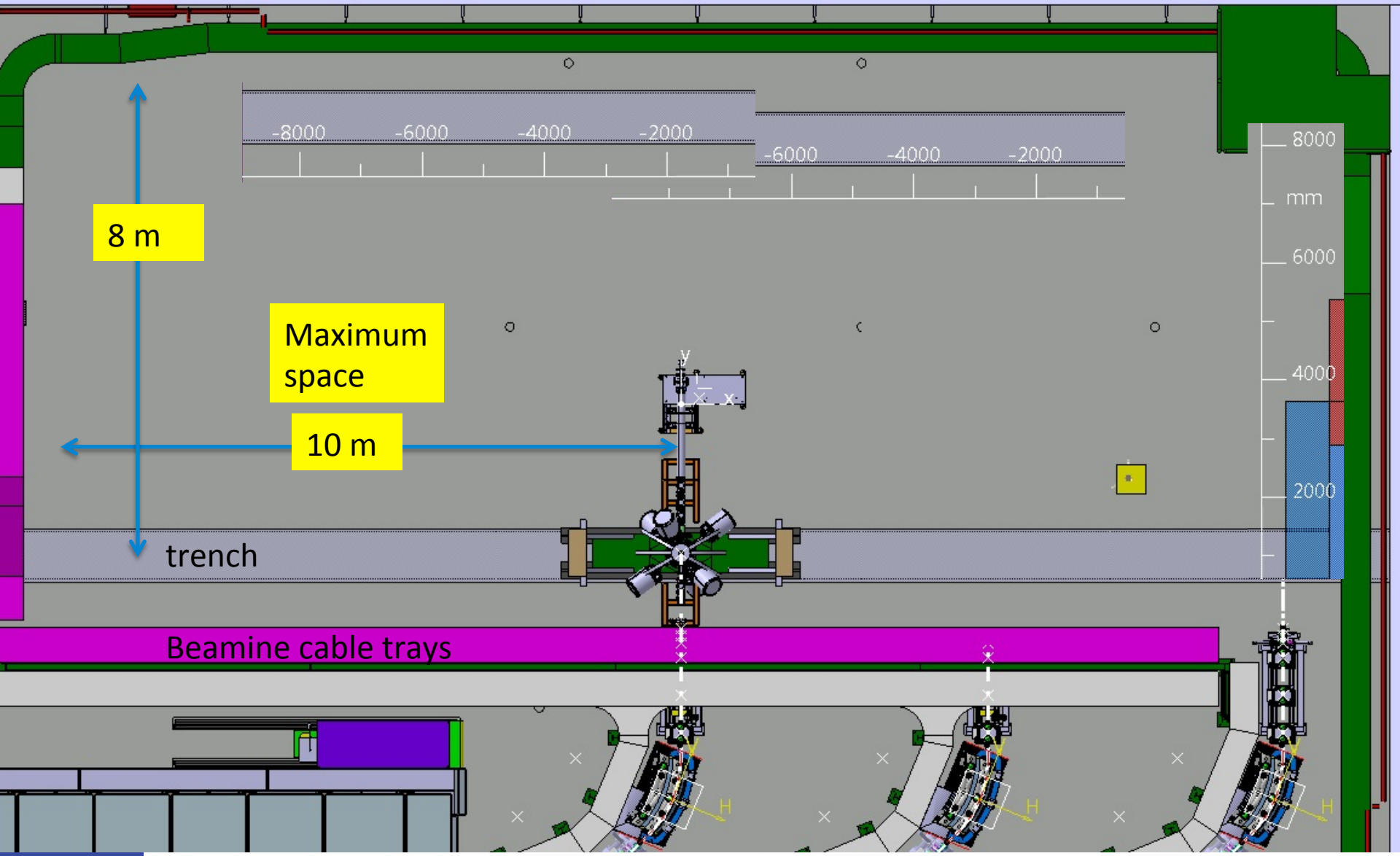


Sec. 2 reversed:
→ Achromatic image

At the final focal plane (T3) there is only ^{21}Na and a small contamination of stable ^{20}Ne which could be reduced to below 0.5 %

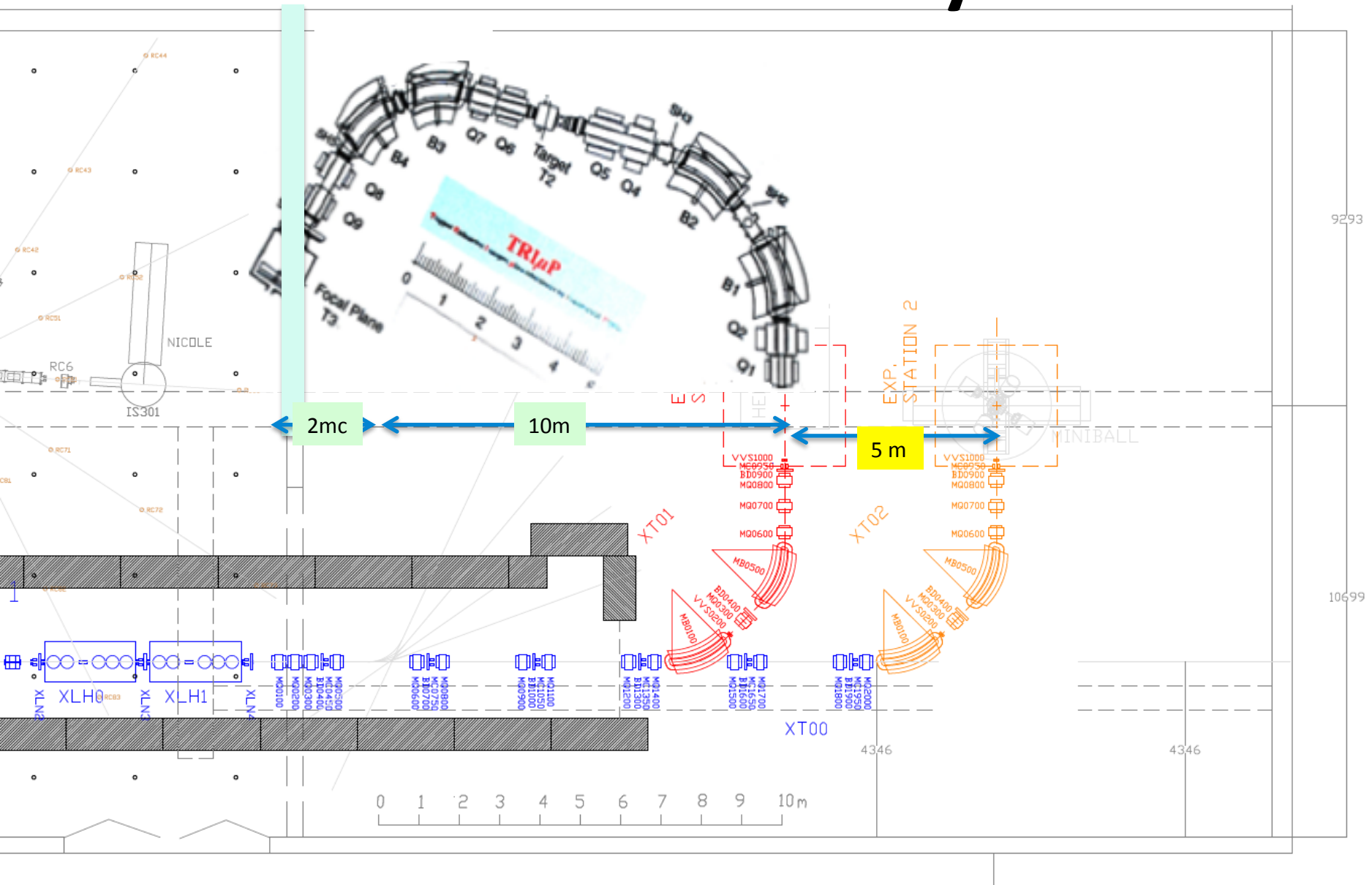
Flight path = 9 + 9 m
Question:
Half or Full TRIμP ??

HIE-ISOLDE hall layout



Ion beam focus: in the middle of the trench

HIE-ISOLDE hall layout



Draft AGENDA TRIμP meeting Groningen period April 2014

Place: University of Groningen , the faculty for mathematics and science
Fundamental Interactions and Symmetries http://www.rug.nl/staff/departments/18012

Group@Univ. Groningen: Hans Wilschut, **Lorenz Willmann** l.willmann@rug.nl Klaus Jungmann, Gerco Onderwater and Steven Hoekstra

ISOLDE: **Olof Tengblad** olof.tengblad@cern.ch , Joakim Cederkäll Joakim.Cederkall@cern.ch , Wilton Catford w.catford@surrey.ac.uk

Information to be exchanged & Questions to be discussed:

TRImuP

1a.) The TRIμP separator : Specs, use half or full? Footprint, weight?

2a.) Equipment needed existing? Power supplies Racks, Rails?,

3.) Administrative problems Owner, transport (on loan or permanent)

4.) Local collaboration? Experiments at ISOLDE?

ISOLDE

1b.) Available footprint? Use half or full spectrometer?

2b.) Accepted standard at ISOLDE for installation of Power supplies Racks, Rails?,

5.) The intended use of the separator at ISOLDE in order to motivate the move of the equipment also on scientific ground. (Joakim & Wilton)

6.) What is a realistic time scale for the installation and use of the separator at ISOLDE? (Olof)

7.) Project name?

MAGISOL SI-PLUGIN FOR IDS

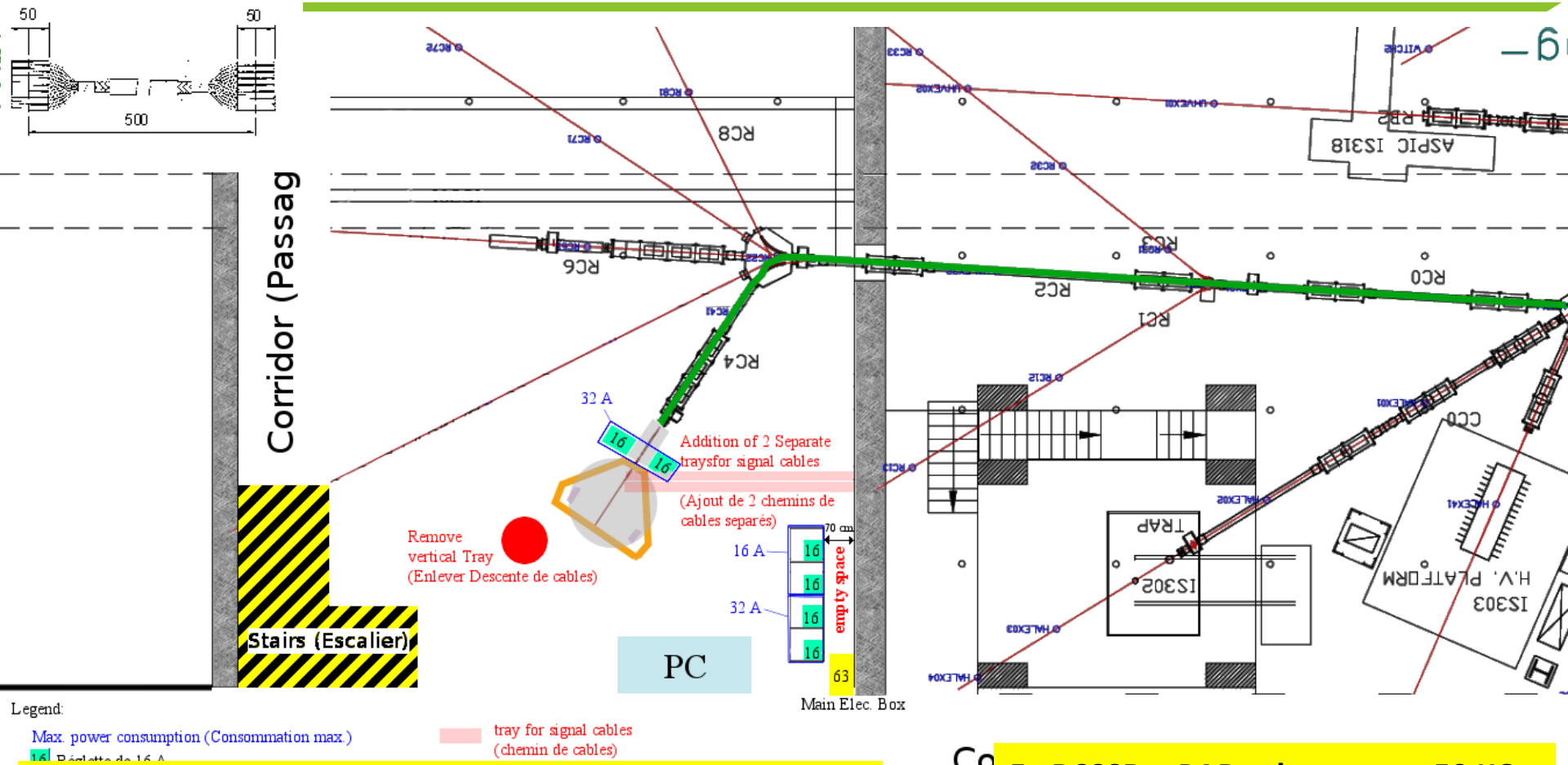
^{31}Ar (IS476, IS577)

- Time for experiment 14 – 19 October

- Which detectors do we need thickness?
  - 2 x 60 μm
  - 2x40 μm
  - 1x500 μm
  - 8x PADs 500 μm (4x500 + 4x 1000)

- Is the JYFL set-up OK for the charged particles?
  - Any other dsitribution of detectors?

Sketch IDS Layout (Mistral position)



Charged Particles: **Permanent Installation**

1x RACK with 1x VME and 2x NIM CRATES

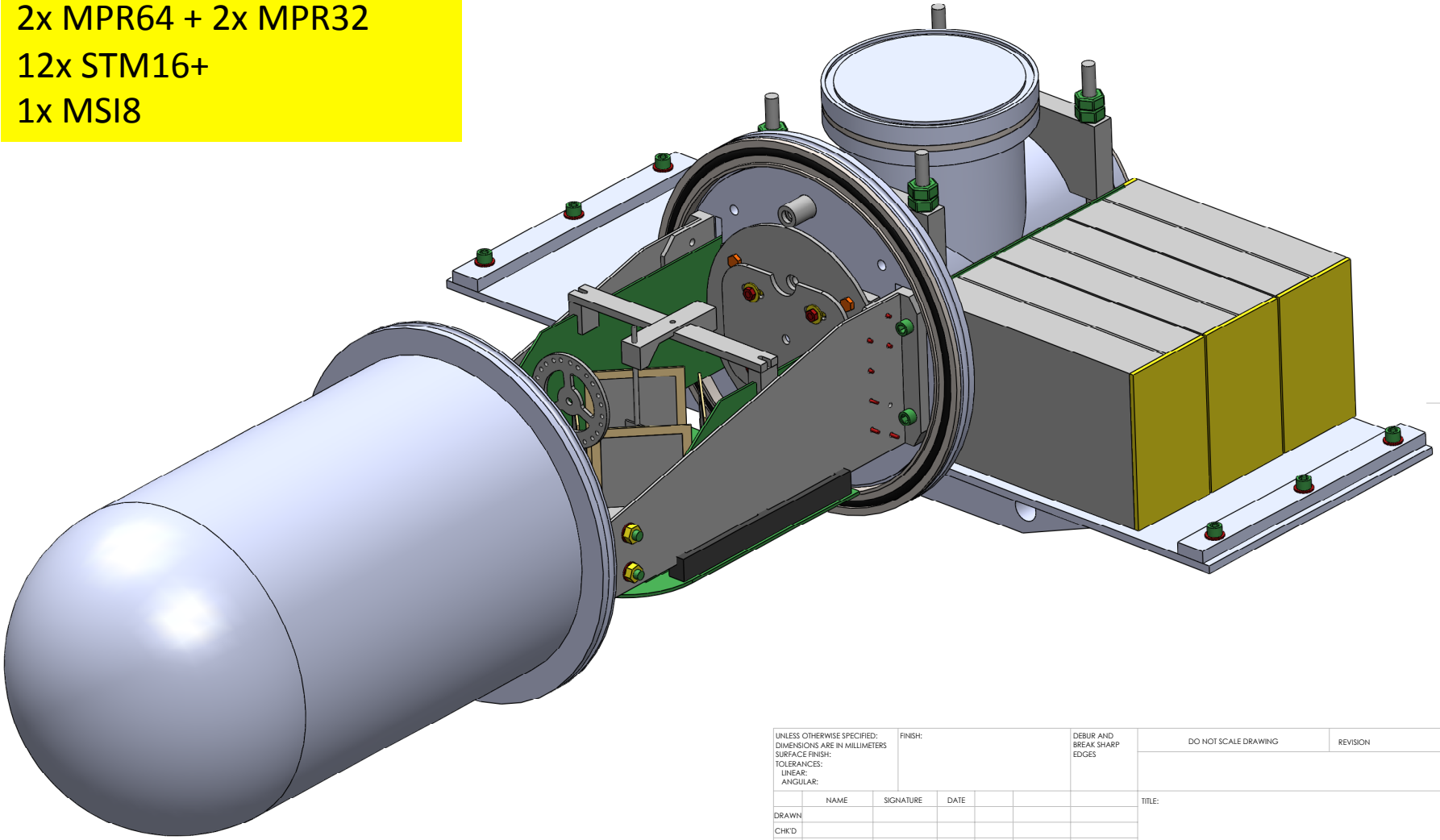
10x Multiwire Signal Cables; PreAmp → RACK about 12m cables 10x12mx10CHF = 1 K€

5x DSSSD + PAD telescopes = 50 K€
2x MPR64 + 2x MPR32 = 25 K€
12x STM16+ = 50 K€
1x MSI8 = 5 K€ **Σ=130 K€**

MAGISOL SI-PLUGIN FOR IDS

Grupo de Física Nuclear Experimental

5x DSSSD + PAD telescopes
2x MPR64 + 2x MPR32
12x STM16+
1x MSI8



UNLESS OTHERWISE SPECIFIED: DIMENSIONS ARE IN MILLIMETERS SURFACE FINISH: TOLERANCES: LINEAR: ANGULAR:	FINISH:		DEBUR AND BREAK SHARP EDGES	DO NOT SCALE DRAWING	REVISION
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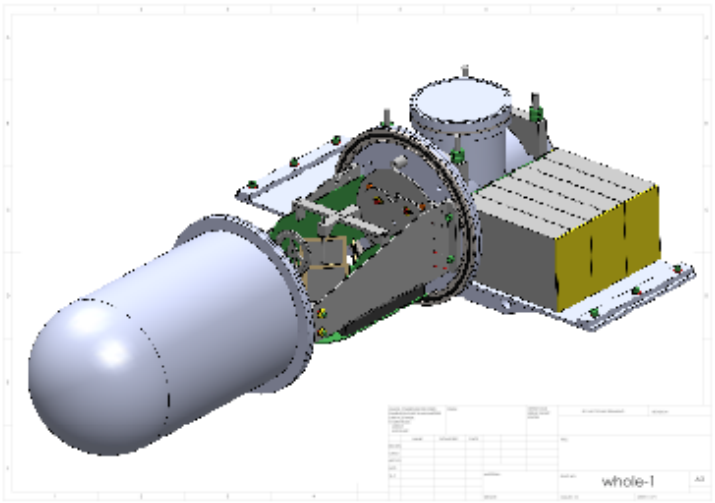
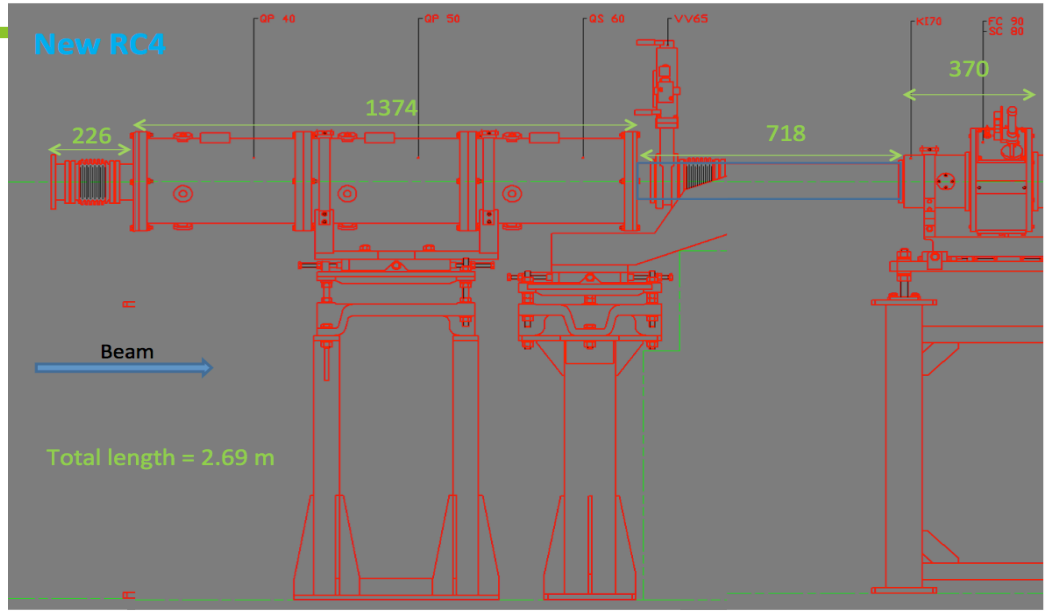
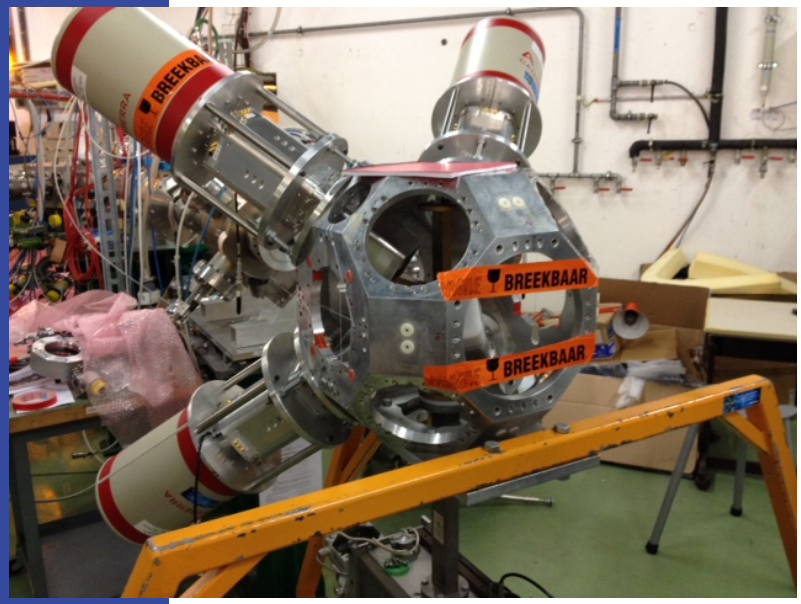
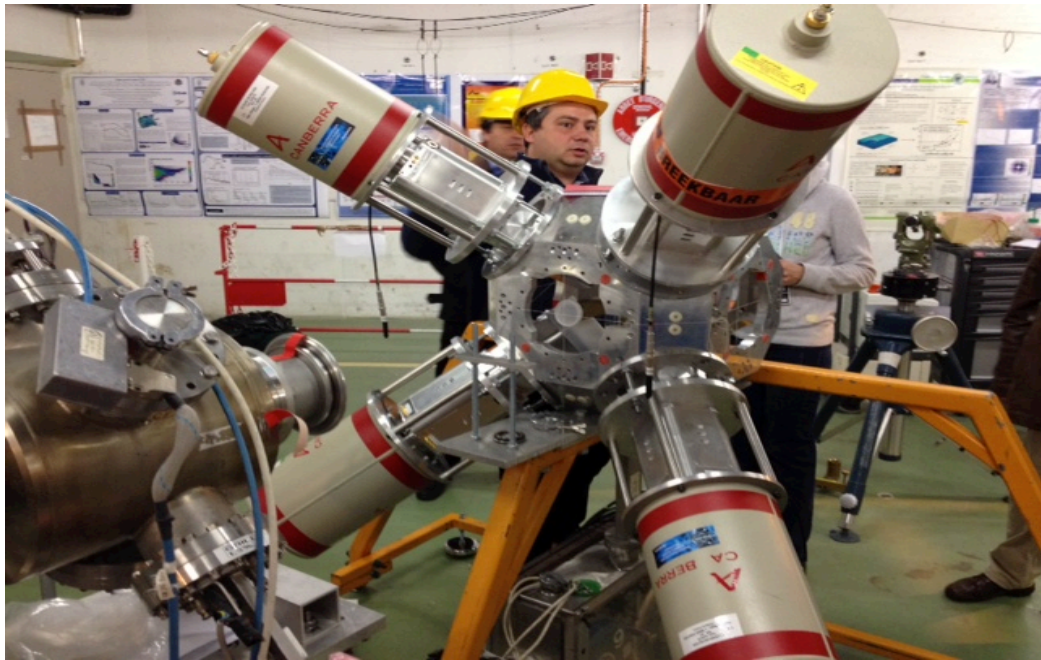
DRAWN					
CHK'D					
APPV'D					
MFG					
Q.A				DWG NO. whole-1	A3
			MATERIAL:		
			WEIGHT:	SCALE:1:10	SHEET 1 OF 1

IDS + DSSSD + HpGe

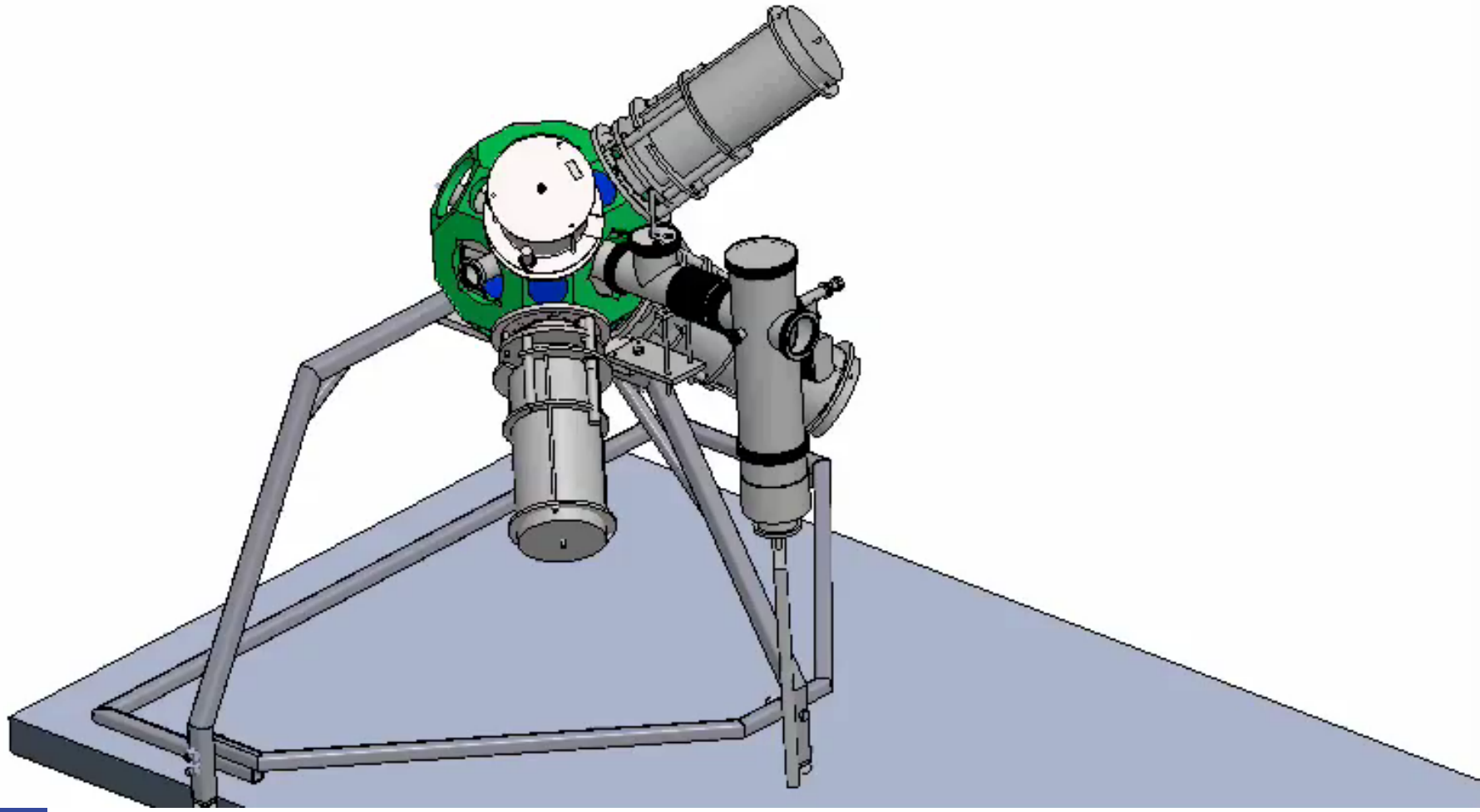




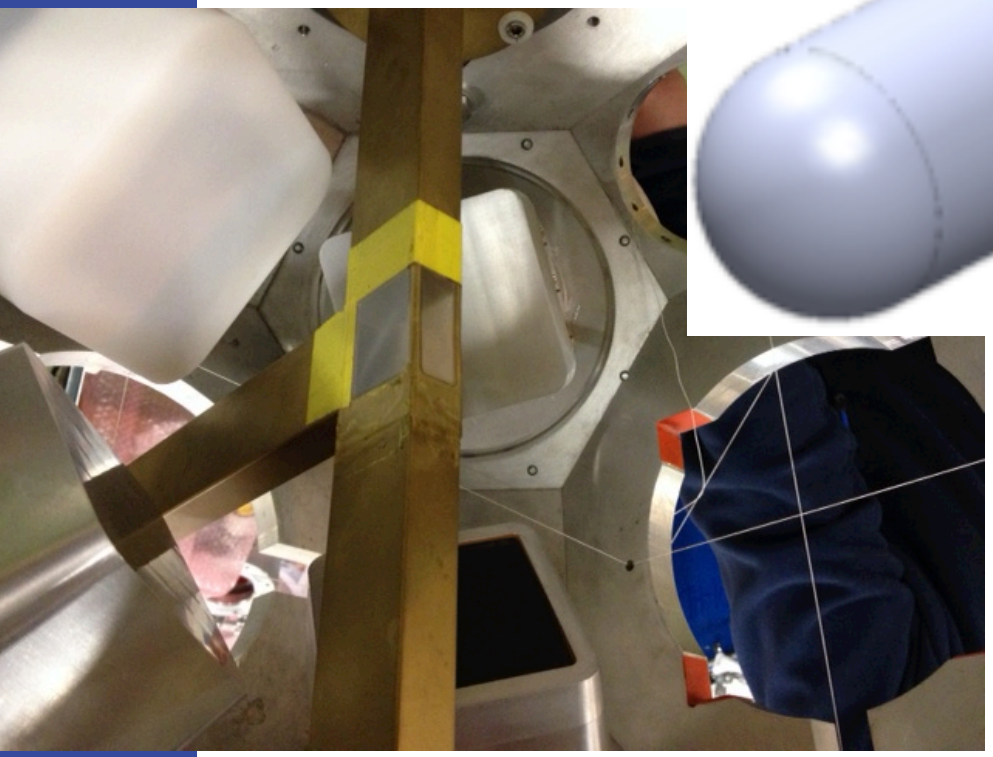


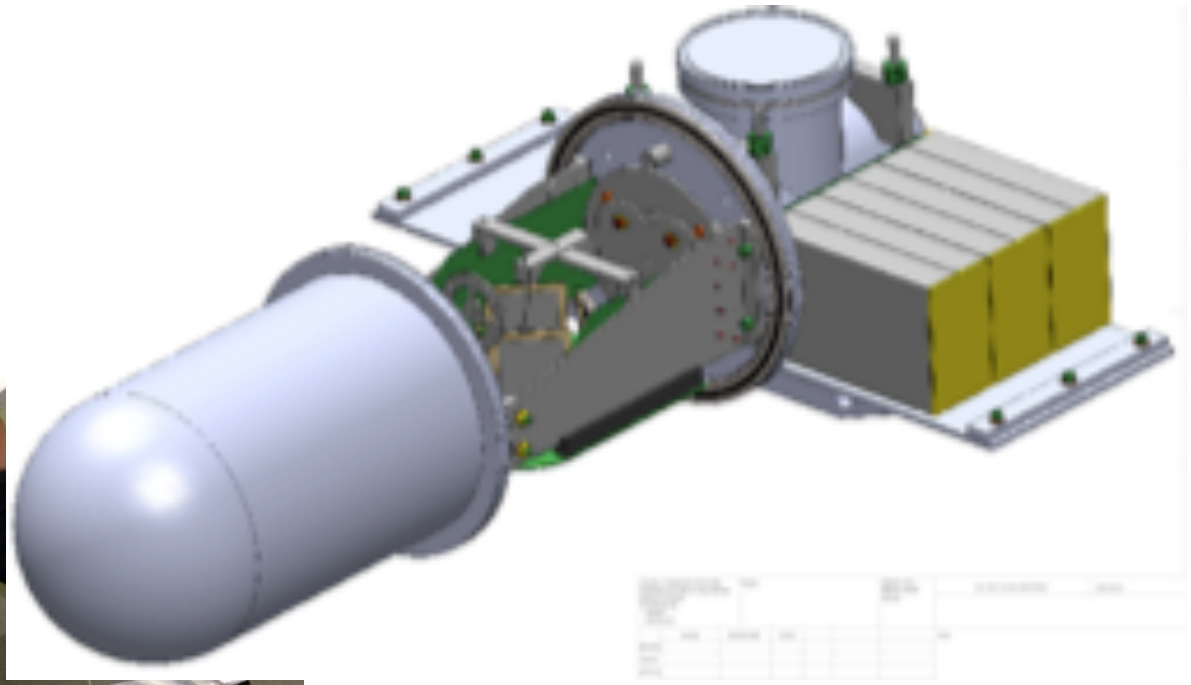


IDS→ MAGISOL SI-PLUGIN



MAGISOL SI-PLUGIN FOR IDS





5x DSSSD + PAD telescopes
2x MPR64 + 2x MPR32
12x STM16+
1x MSI8