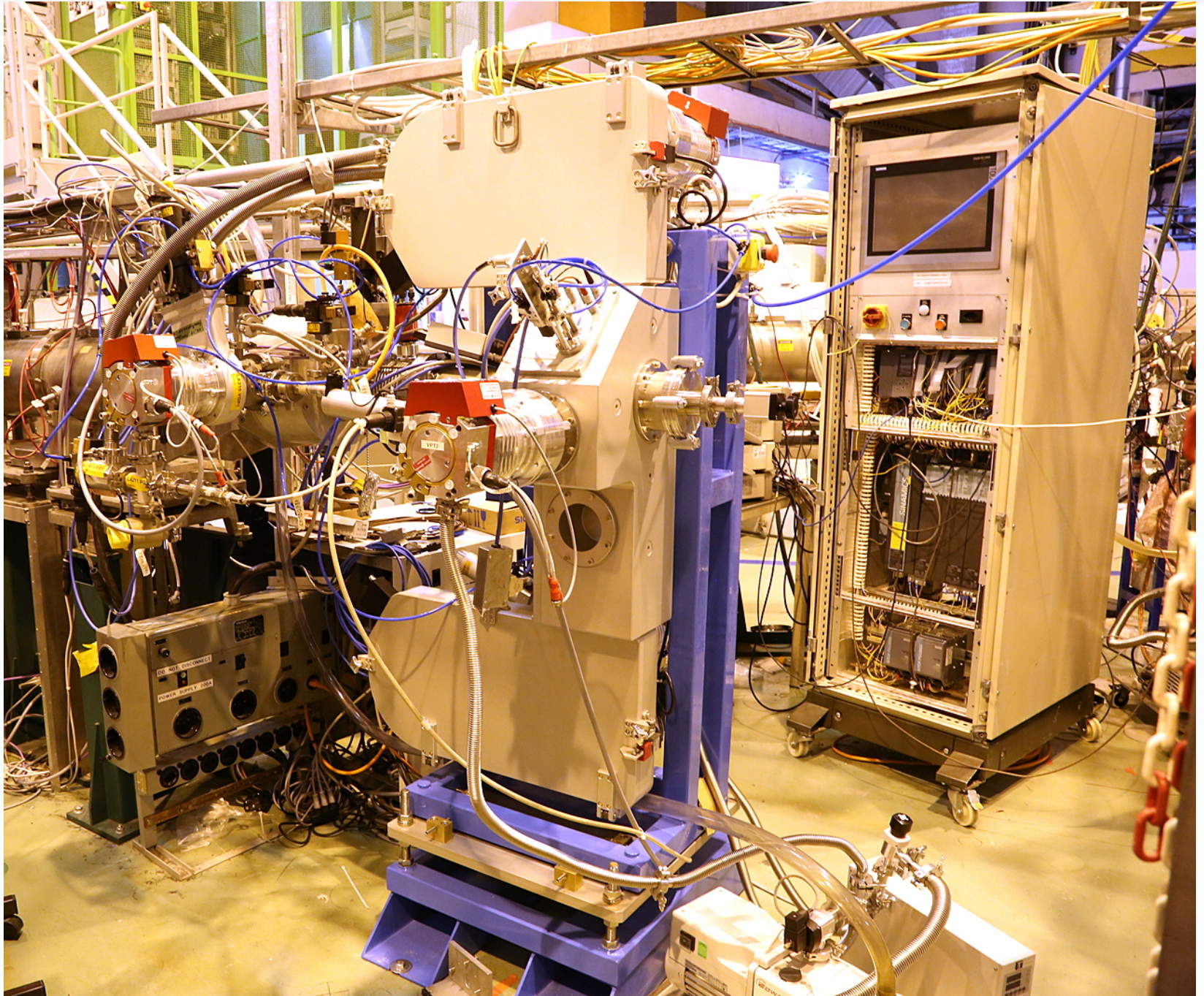


An aerial photograph of a tidal flat, showing a complex network of sandbars and channels. The water is dark and rippled, while the sand is a lighter, textured grey. The patterns are organic and repetitive, creating a sense of depth and scale. The lighting is soft, highlighting the textures of the sand and the ripples in the water.

# ISOLDE Fast Tapestation

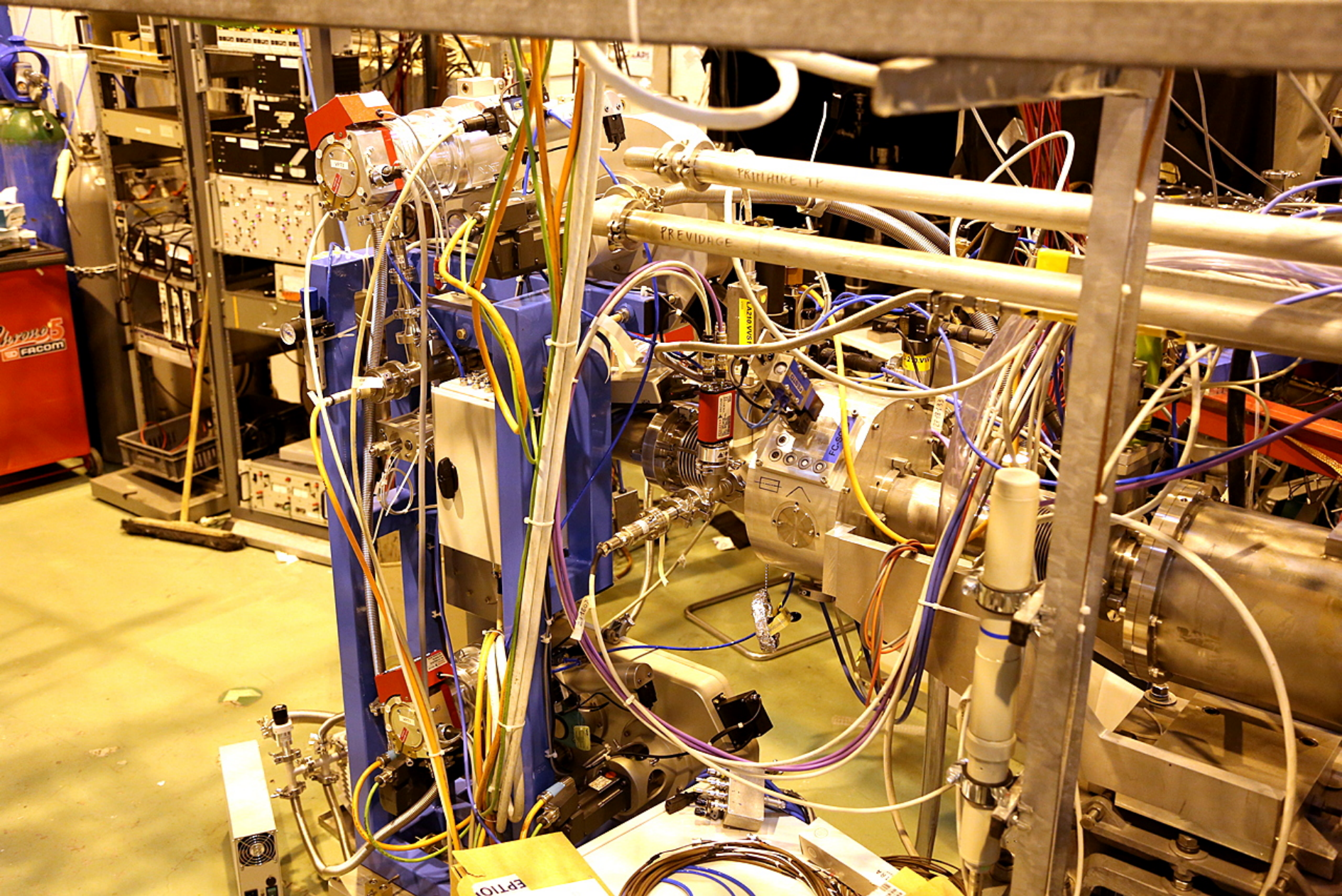


# Mechanics



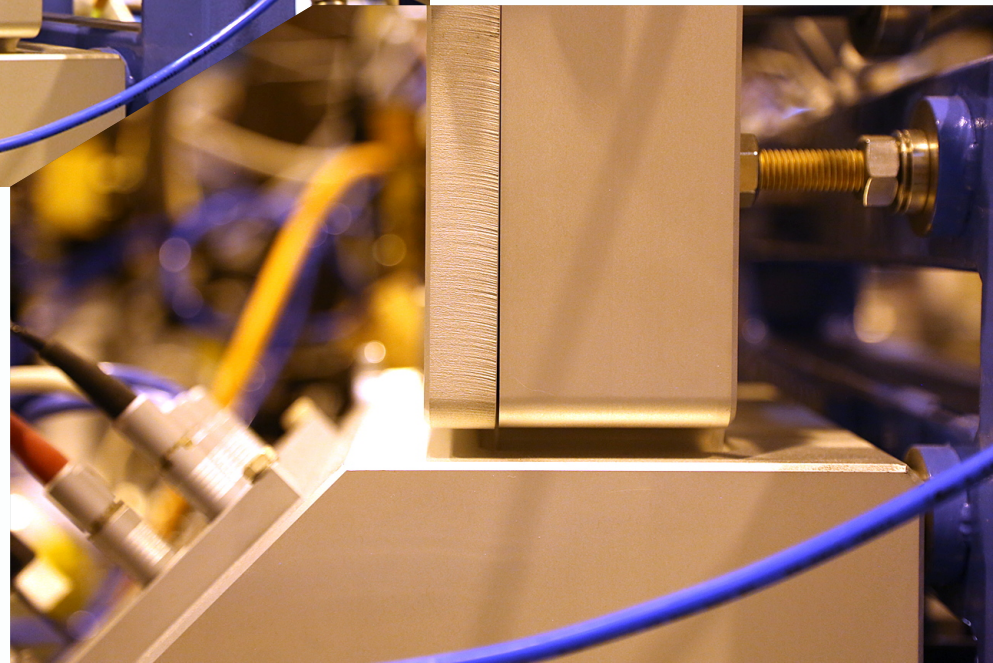
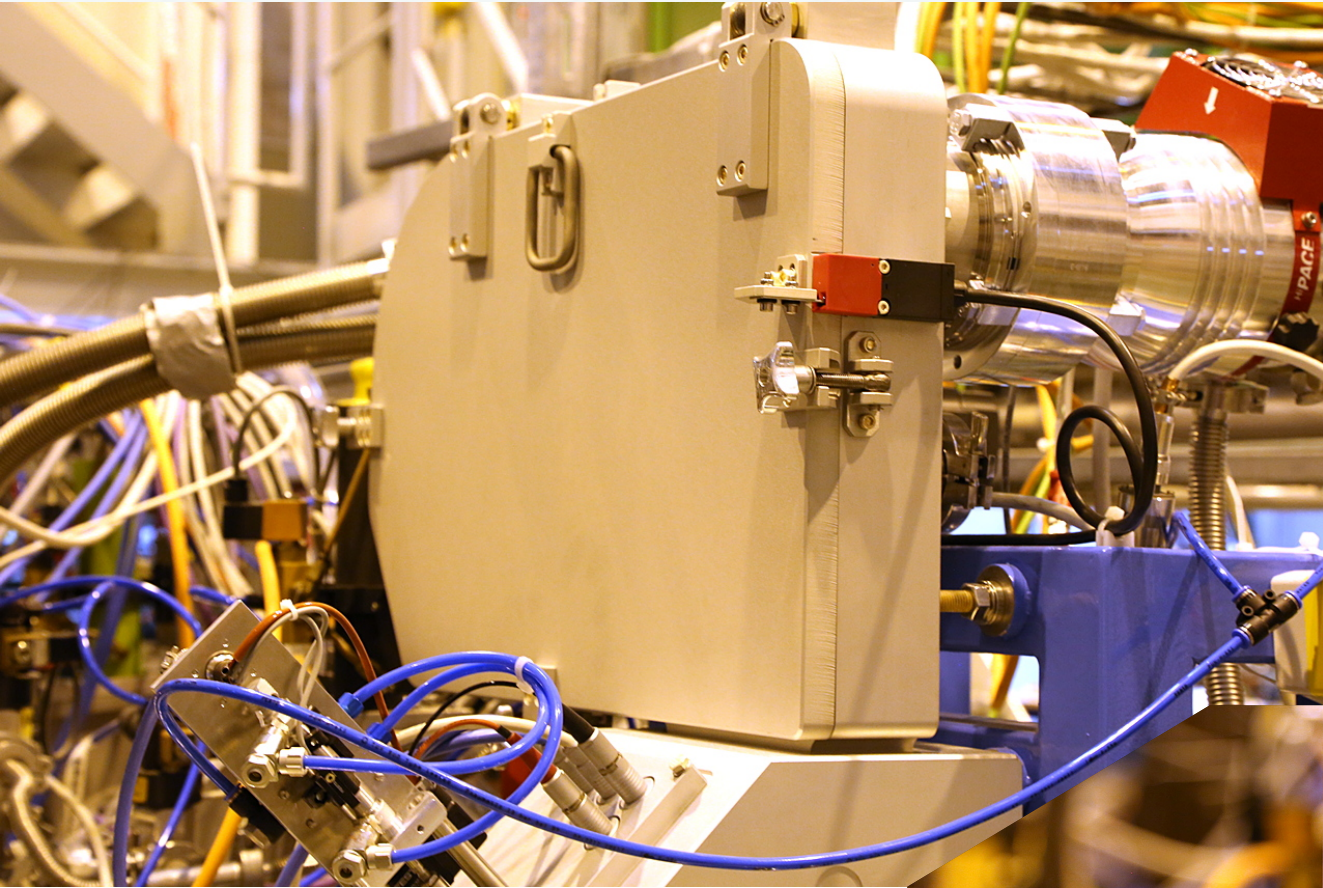


# Mechanics



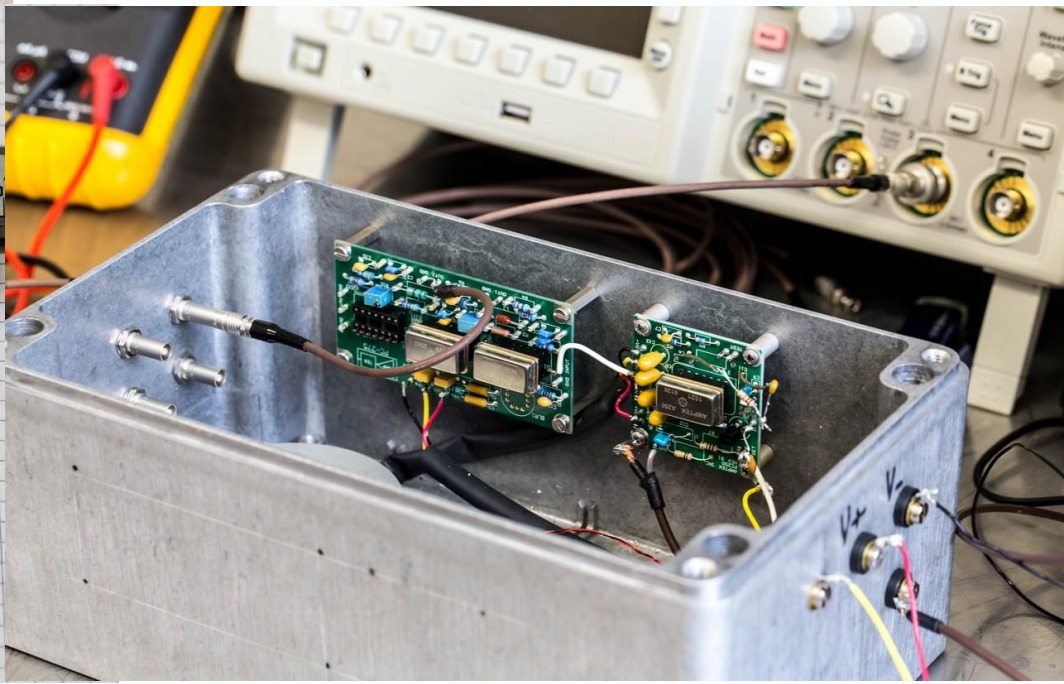
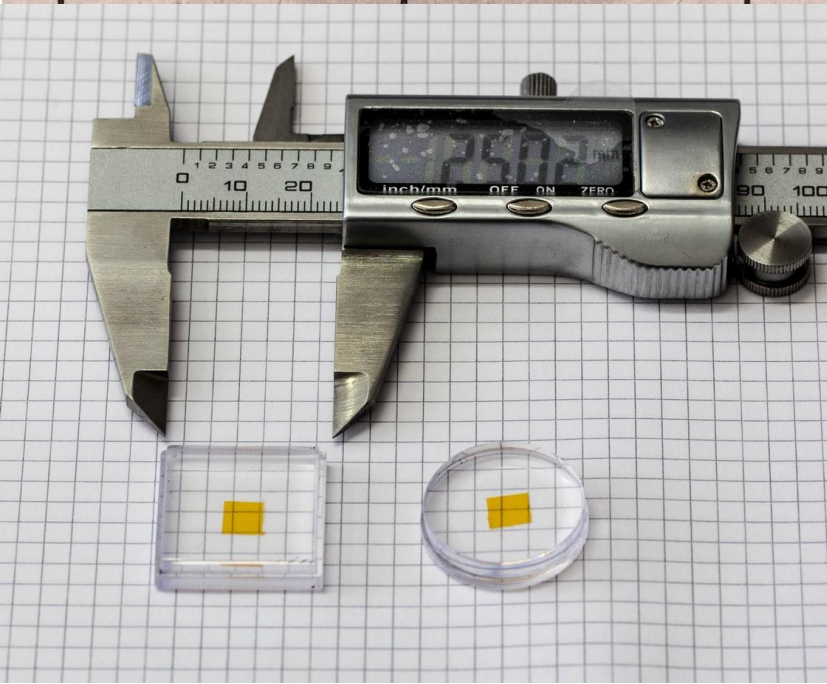
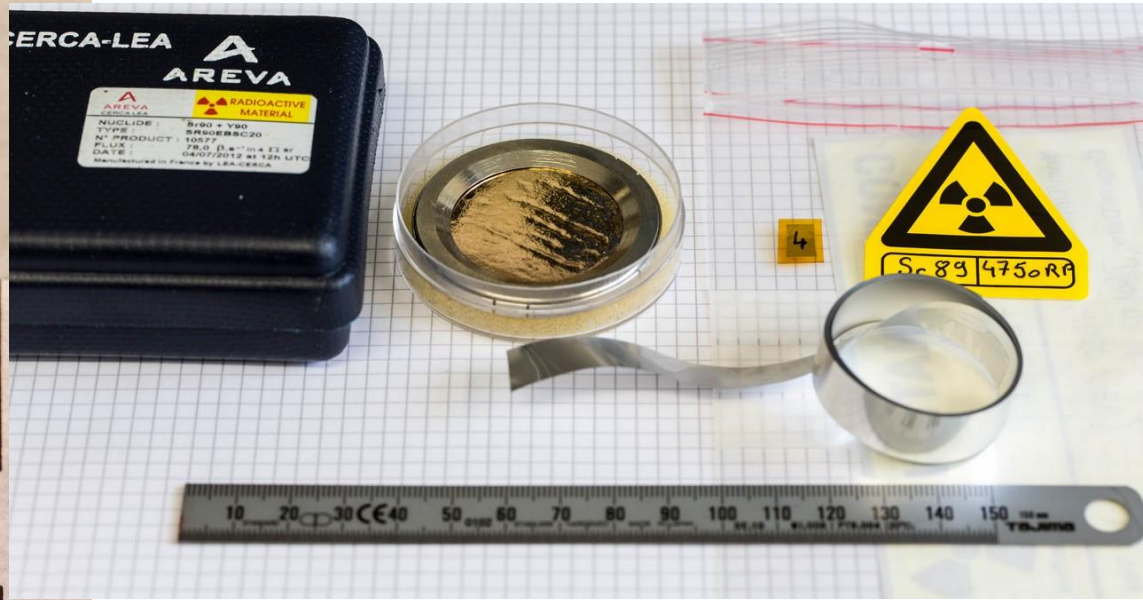
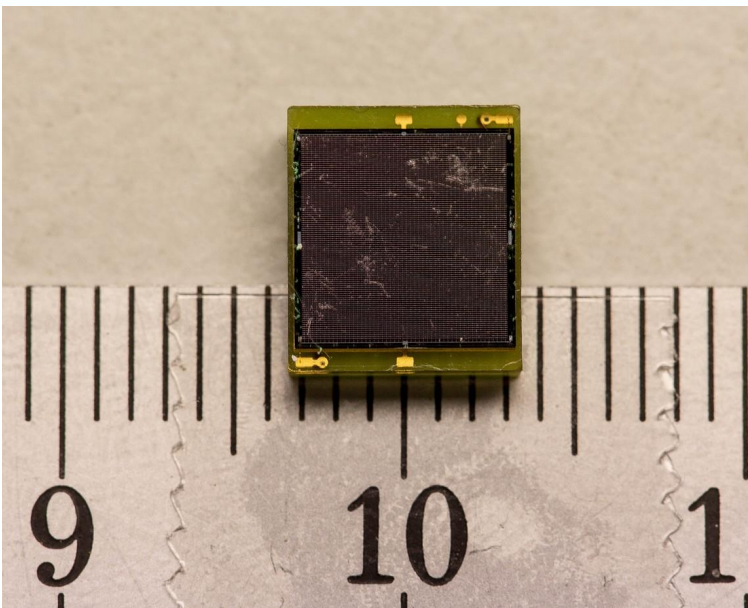


# Mechanics





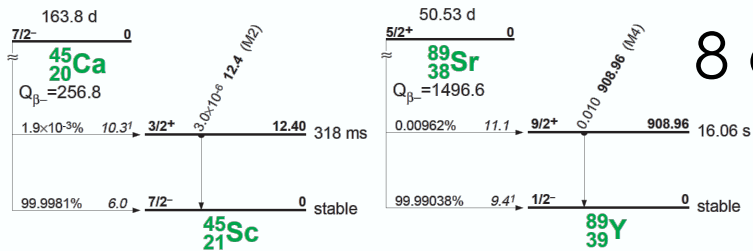
# Detectors



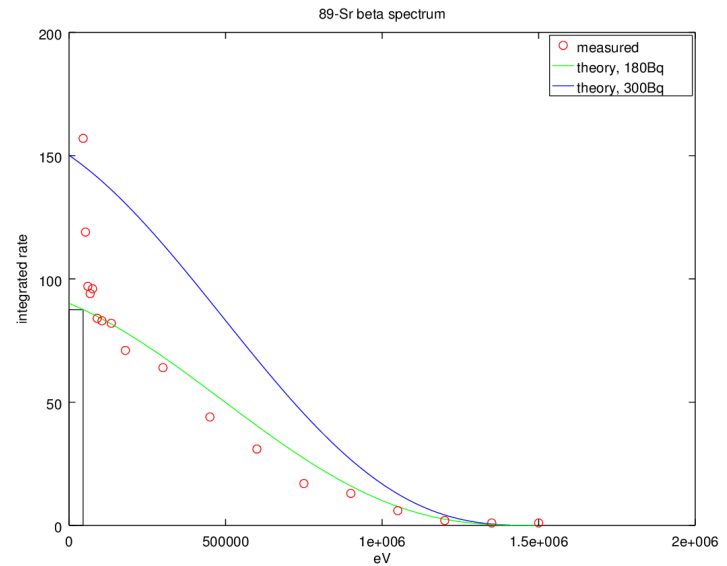
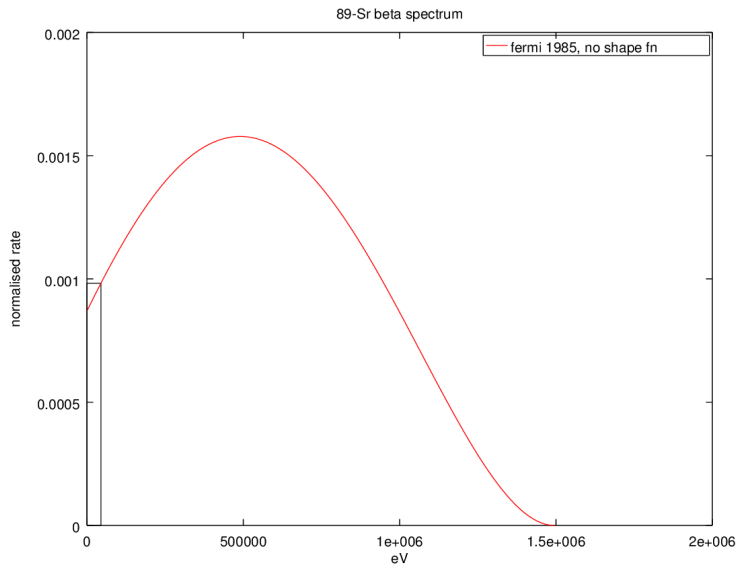


# Detectors

8 calibration sources made at Isolde



89-Sr results:

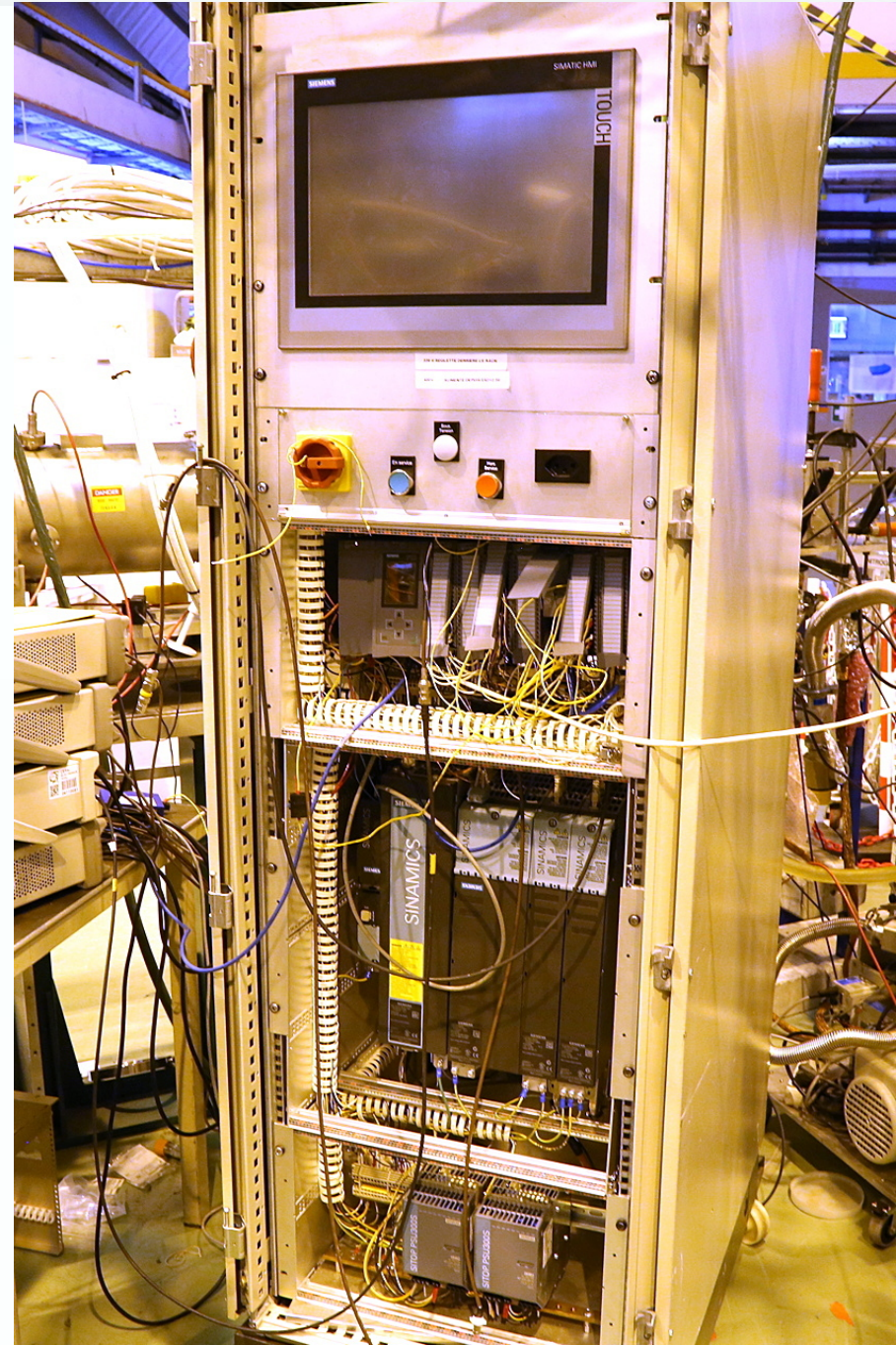
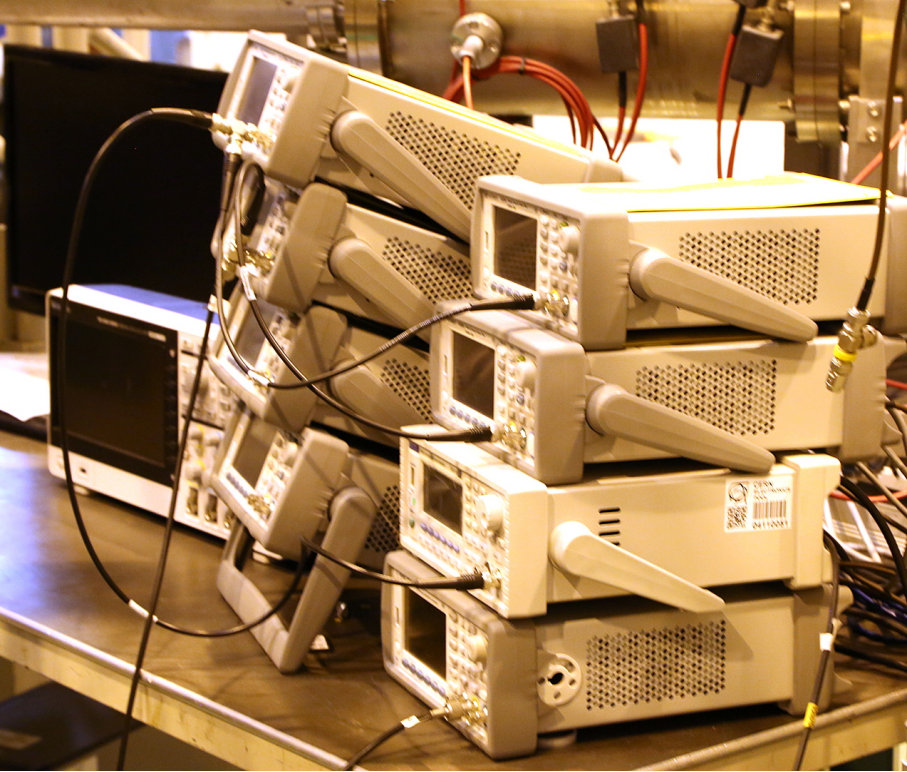


Threshold = 45 keV

Efficiency = 97% ( $Q_{\beta} = 1.5\text{MeV}$ )



# Low-Level Controls





# Console Application

TapeStationPrototype\_0 - Inspector 2.2.40

## Manual Beam Diagnosis

### Tape Station Timings

**Set-up**

Initial Delay	ms	Collection Time	ms
---------------	----	-----------------	----

**In-Beam Detector:  $2\pi \beta$**

Enable Disable Measurement Time ms

**1. Out-of-beam Detector:  $4\pi \beta$**

Enable Disable Transport Time ms Measurement Time ms

**2. Out-of-beam Detector: Gamma**

Enable Disable Transport Time ms Measurement Time ms

# Measurements per detector  Set

### Execution

State **READY**

Current Phase **D**

Cycle  Status

Show Plot Save Results Trigger Settings

### Show Plot

Y-axis	0	100000	200000	300000	400000	500000	600000
X-axis	0	2000	4000	6000	8000	10000	12000

### Trigger Settings

Trigger Type **SOFTWARE**

ISLFTTSA/Setting#triggerChosen

ARM

SOFTWARE TRIGGER

### Status

Control **LOCAL**

Device Status **UNKNOWN**

Machine Armed **false**

### Save Results

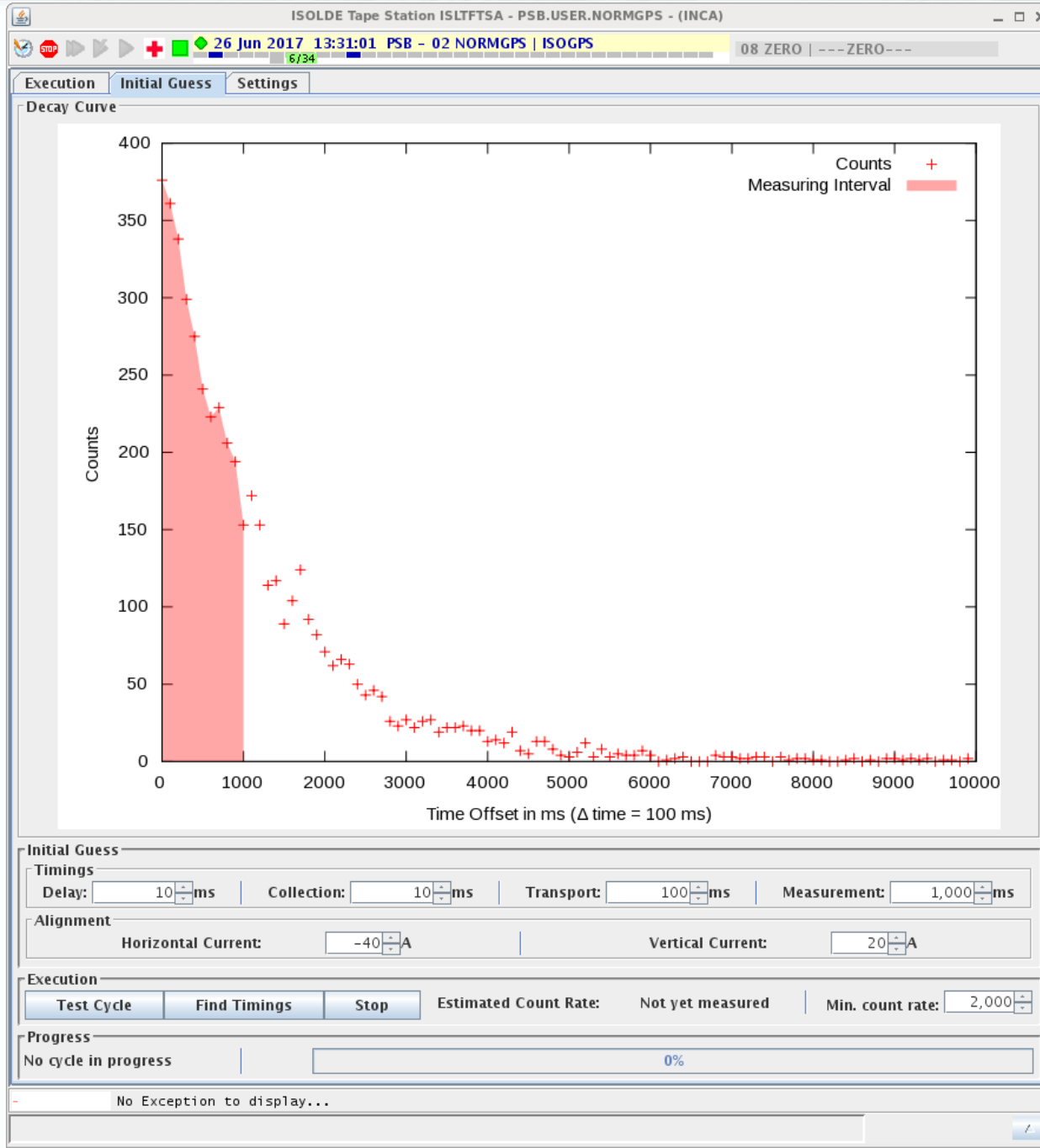
Save results to:

Select Save File

mjouren

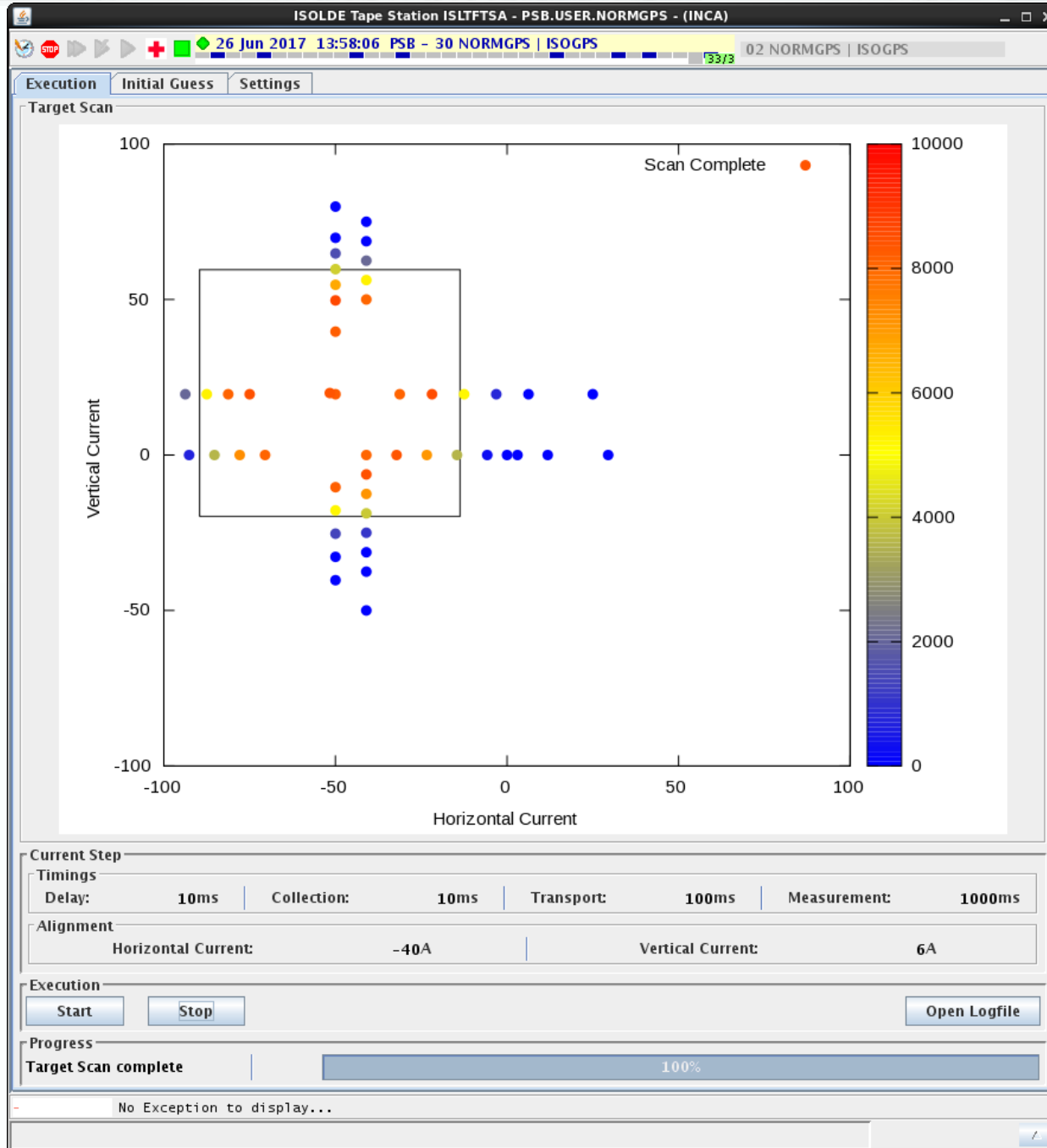


# Automatic Target-Scan





# Automatic Target-Scan





# Automatic Yield-Curves

Read data-points from tapestation file

Find isotope decay chain  ${}^n\text{X} \xrightarrow{\alpha} {}^{n-4}\text{Y} \xrightarrow{\beta} {}^{n-4}\text{Z}$

Calculate decay curve

Make initial guess at release-curve parameters

Calculate modelled counts for each data point

“fit model to data”  
resists problems with long collection times

Minimise average error-per-point

“robust” fit, in units of std. error

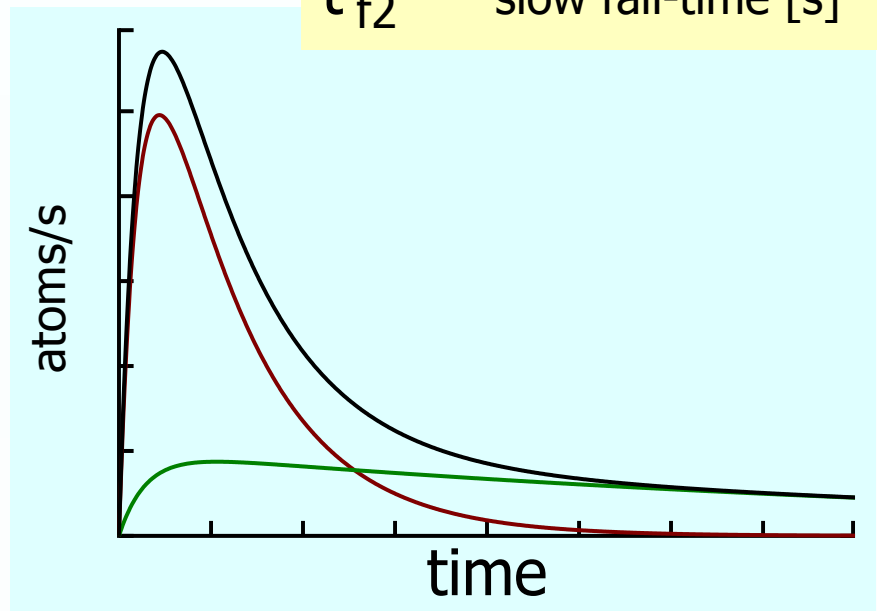
“Simplex” n-dimensional optimiser

Common-sense check

eg.  $t_{f2} > t_{\text{half}}$  ; delete outlying points

Release curve parameters:

$n_0$	yield [atoms / uC]
$r$	fast : slow yield ratio
$t_r$	rise-time [s]
$t_{f1}$	fast fall-time [s]
$t_{f2}$	slow fall-time [s]





# Summary

Finish low-level controls!

Test and debug

Move to CA0

Automatic yield measurements

Long-term software maintenance