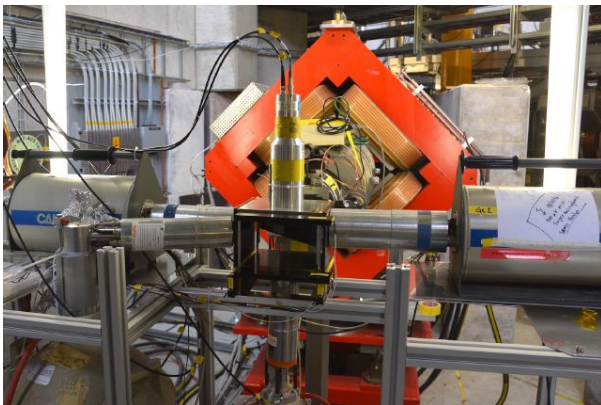


# Measuring muonic X-rays @ PSI

Frederik Wauters

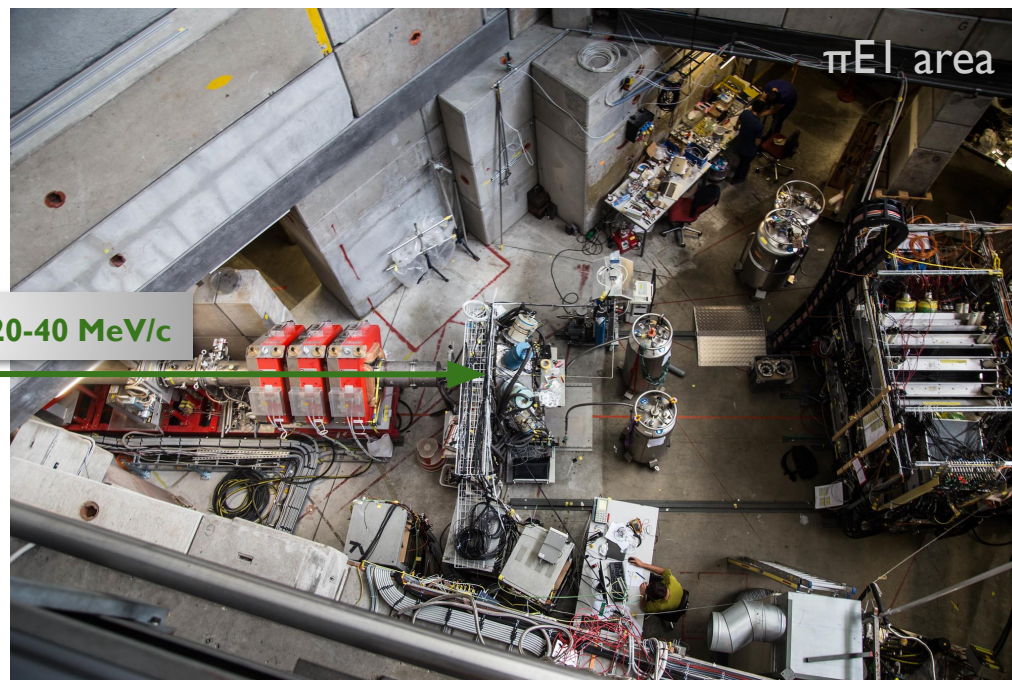
Some pictures and impressions

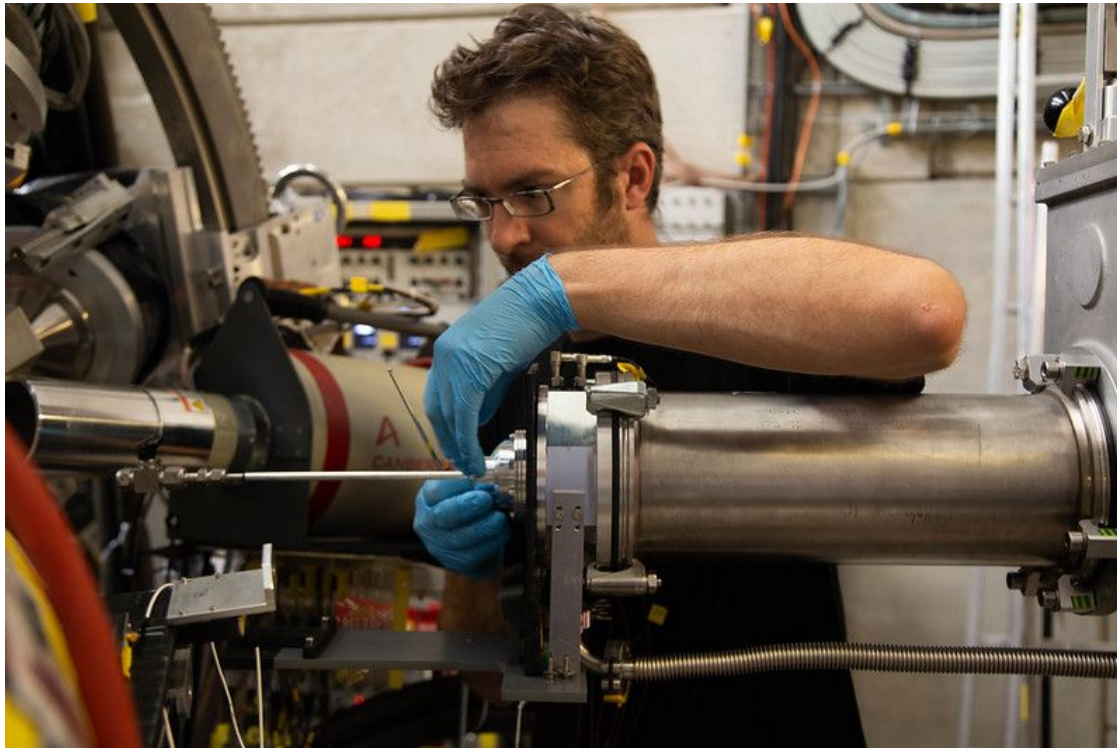


Test beam with 2 HPGe + LISO  
1-2 weeks

Full measurement campaign with  
HPGe array, scintillators,  
neutron detectors, ...  
2-4 weeks

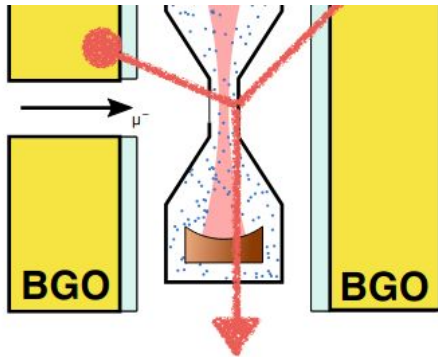
10-100 kHz  $\mu^-$  @ 20-40 MeV/c







# $\mu$ H HFS experiment



... +  $n$  +  $\gamma$  + ...  
 efficiency: 60 %

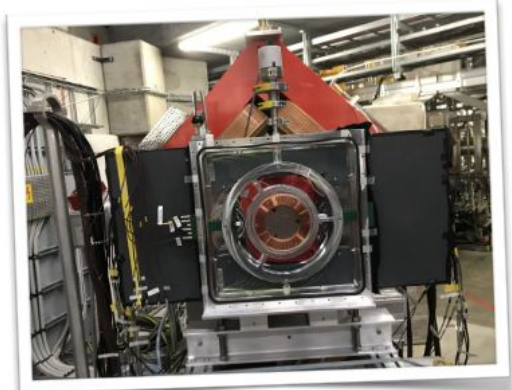
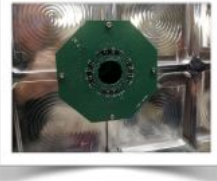
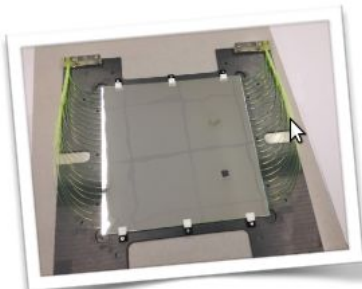
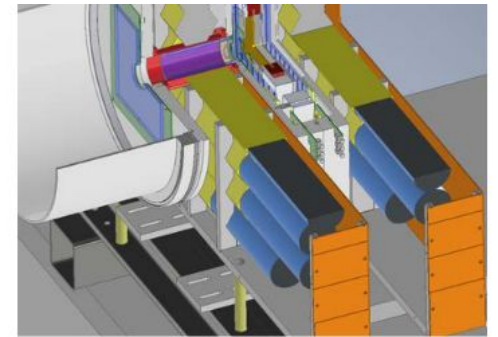
Background signal

$$\mu \rightarrow e + \nu + \bar{\nu}$$

↓

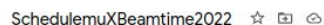
Bremstrahlung + ....

false identification: 6%





3 experimental areas for particle physics



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A1:CB1    fx    Beam Schedule 2022

[illegible]

**Week 51**  
**Week 51**



Secondary Beam Lines

Description

Secondary Beamlines ▾

User Information ▾

Beam Requests and BVR ▴

Call for Beam Time Requests

Previous User Meetings

## Call for New Proposals/Letters of Intent/Beam Requests for Experiments or Tests using PSI's Pion, Muon and Ultracold Neutron Beams

### BV 54 - Benutzerversammlung Ring

Next Users' Meeting Ring: January 23 - 25, 2023 (extended to Jan 27 if remote)

### Submissions and beam requests

Deadline for submissions and beam requests: **January 9, 2023**

### Program

### Beam Time Request Form

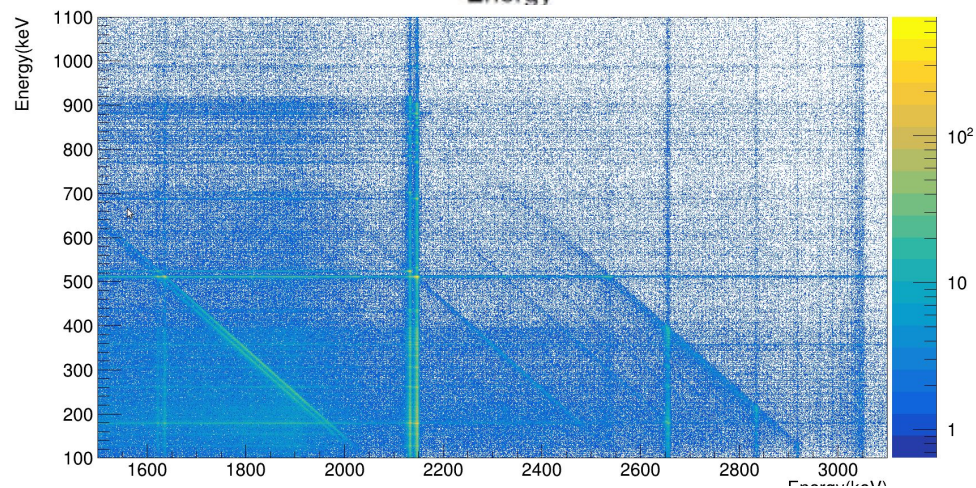
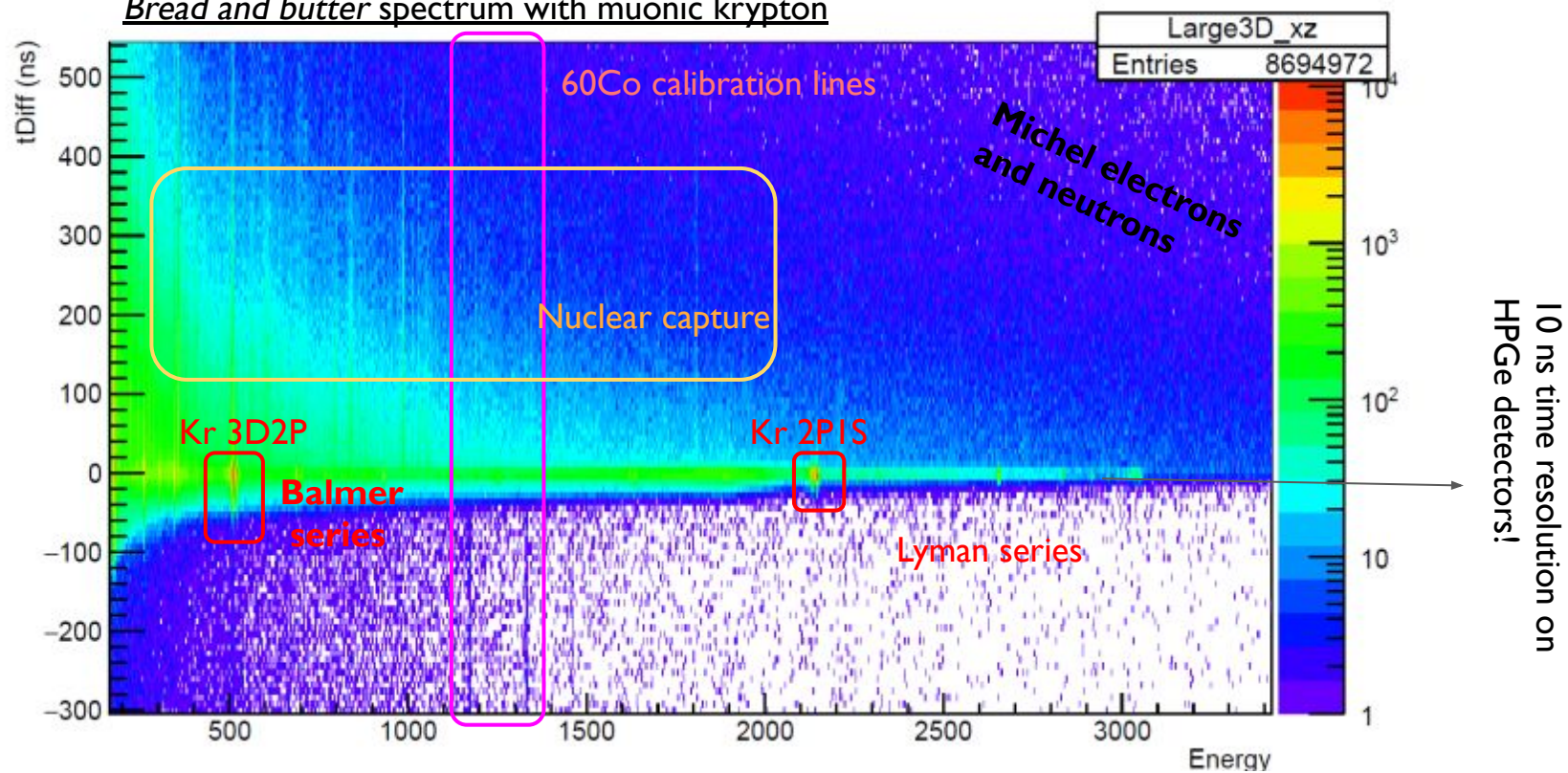
[PDF File](#) / [MS Word File](#)

## General Remarks

The pion, muon and UCN beams of PSI are normally available free of charge to user groups of universities and research laboratories. A prerequisite for the charge-free admission of external users is the readiness to publish the scientific results in internationally accepted journals, giving proper credit to PSI staff members involved in the experiments as well as proper mention of the PSI facilities.

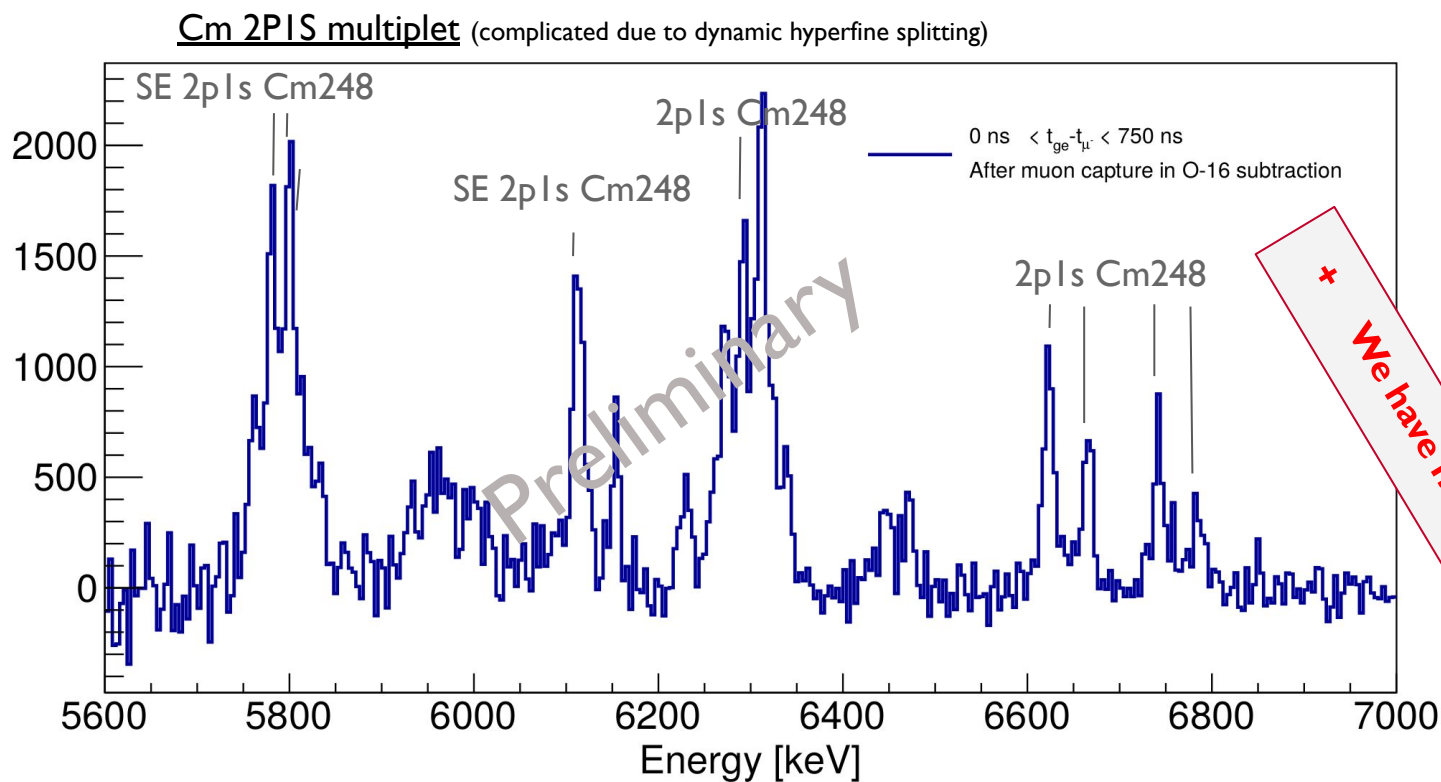
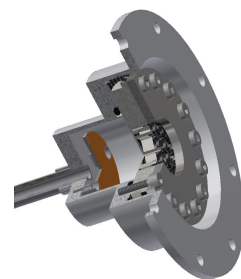
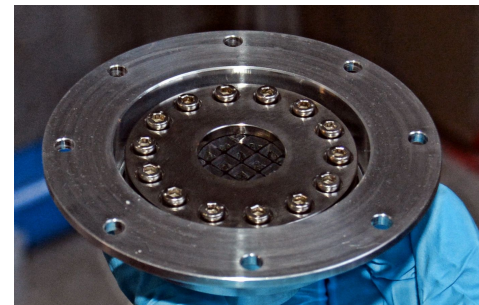


# Bread and butter spectrum with muonic krypton





- Measuring 2PIS in  $\mu\text{g}$  of material
  - Stop 30 MeV/c muons in a small amount of material
  - $\mu \rightarrow \mu\text{H} \rightarrow \mu\text{D} \rightarrow \mu\text{Z}$  transfer cell
  - Demonstrated in 2017, few % efficiency
  - Measured 248/246Cm



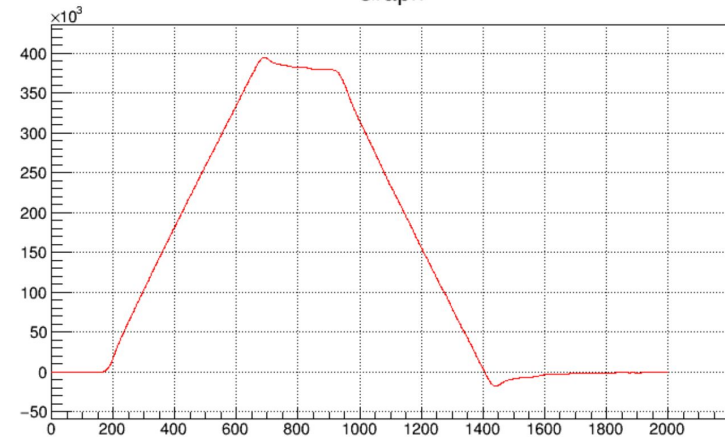
- SIS3316 digitizer modules



- 250 MHz
- Save every single channel trigger (coincidences & events in software)
- Save raw waveforms

### Trapezoidal filter

Graph



### Save raw waveforms

