PSI

IMPACT Instrumentation

Status

M. Sapinski
PSI, 21 July 2025

Main updates:

1. Wire cross-talk, AEK requests

2. OAWM

3. SoM-CAM for Harps?

In-Shielding Profile Monitors: MHP/S23/24 and MHP/S23B/24B

1   Beam Profile and position measurements

2   Modular design as MHP/S45/46

3   Electronics: SoM-CAM + new motor controller + DBPM3-HIPA

4   One motor driving synchronously two wires
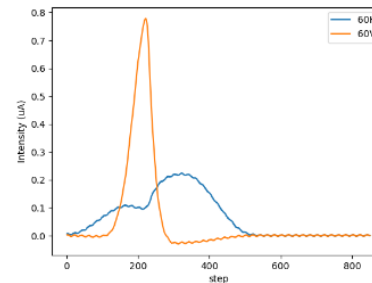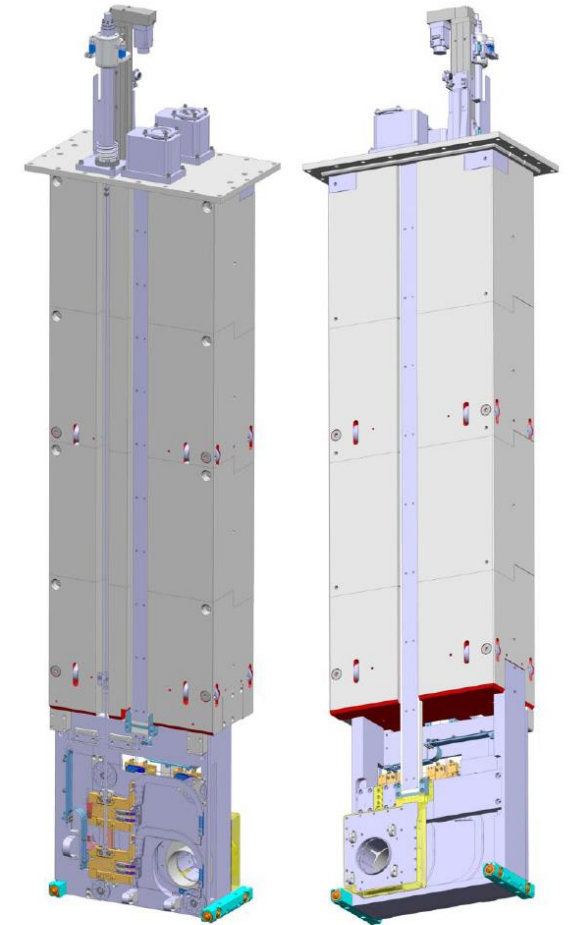   - potential cross-talk between the wires

J. Touguet report, 2024
MBPT monitor

FIGURE 4.2
Beam profiles from the horizontal and vertical wires for a 60V bias applied at both wires

5   AEK request done

6   Today discussion about spare parts with Lukas Troendle.

In-Shielding Ionisation Chamber: MHI11

1. Measurement of the beam loss
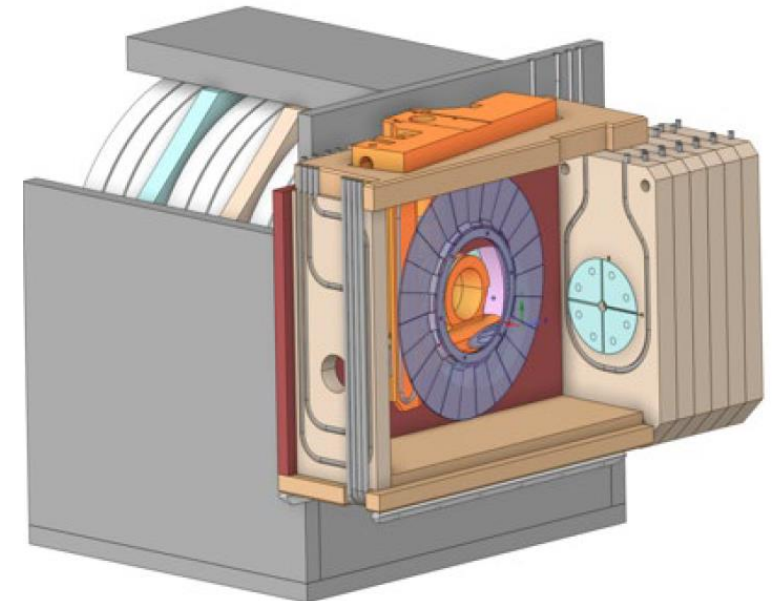
2. Similar to MHI25

3. Electronics: SoM-CAM + HV4

4-segment aperture foil: MHBEI

1   Measure beam tails/position in front of KHHEI

2   Electronics: SoM-CAM

3   Foil thickness: 50 µm, Molybdenum

4   Foil pattern rotated by 45 degrees, so we
      see up/down/left/right signals. Other aperture foils in HIPA
   are rotated (checked MHB7, MHB8, MXB2A/B…) – be consistent!
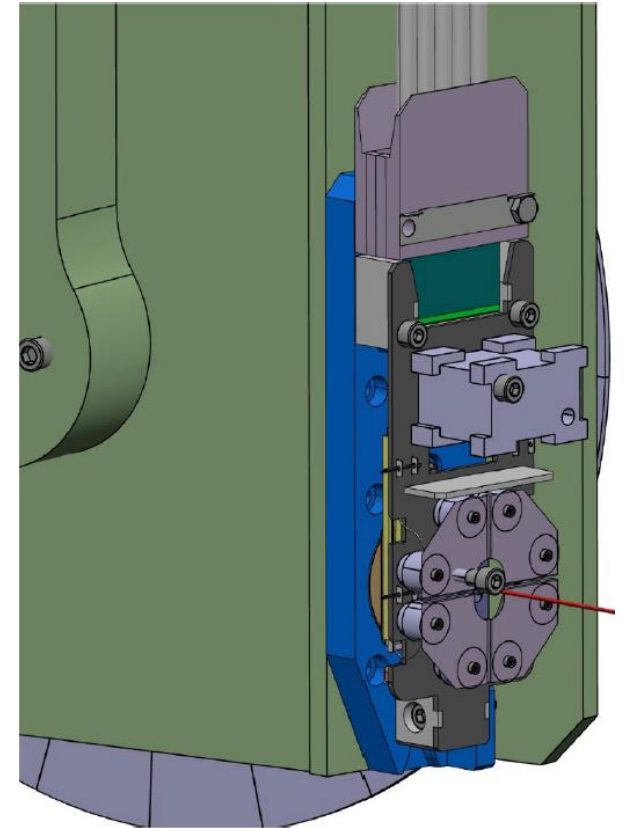
4-segment aperture foil: MHB0

1 Measure beam tails/position in front of KHH0

2 Electronics: SoM-CAM

3 Foil: 50 µm Molybdenum

4 Rotated 45 degrees

Paul Scherrer Institute PSI   21.07.2025

4-segment aperture foils: MHB1 and MHB2
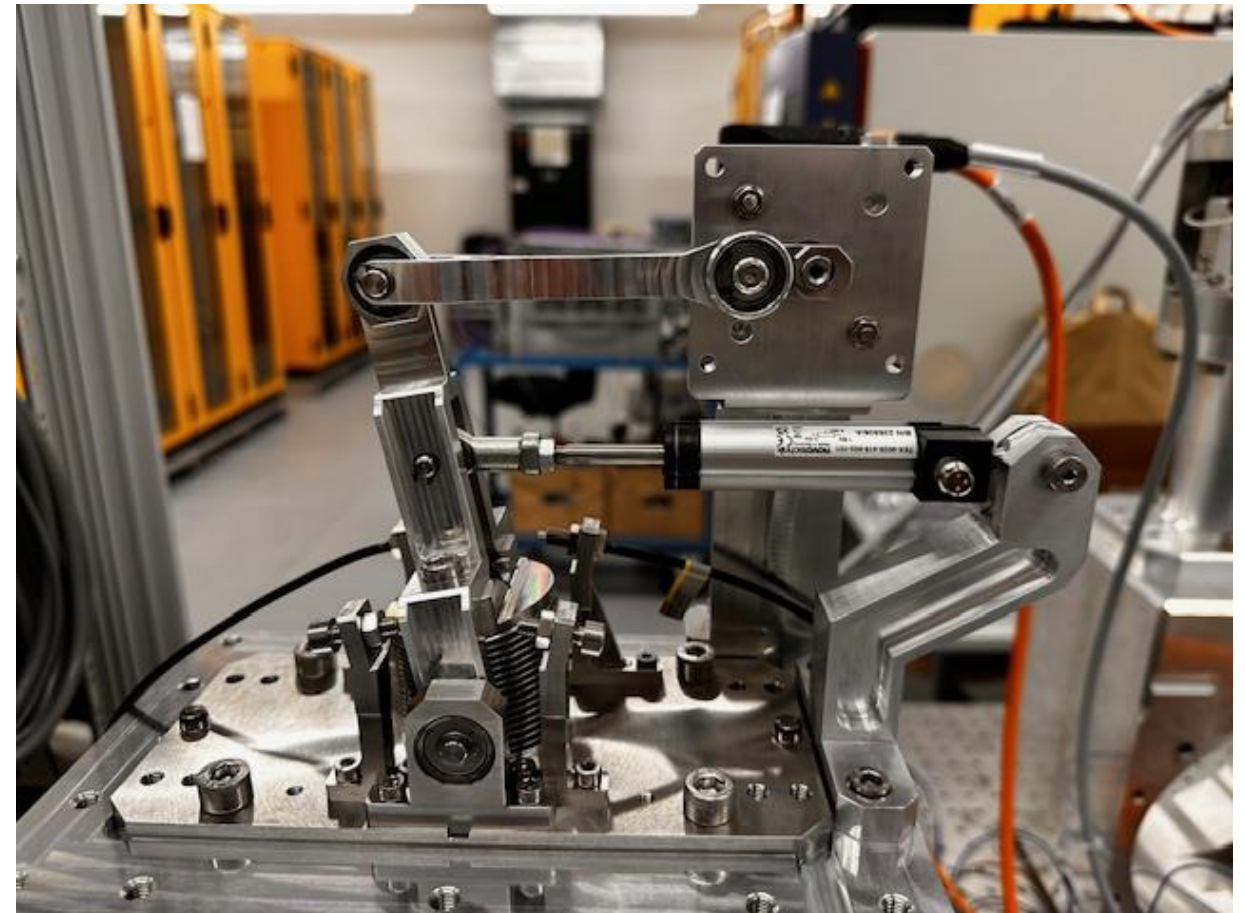
1. Measure beam tails/position in front of KHH1 and KKH2

2. Electronics: SoM-CAM

3. Foil: 100 µm Molybdenum
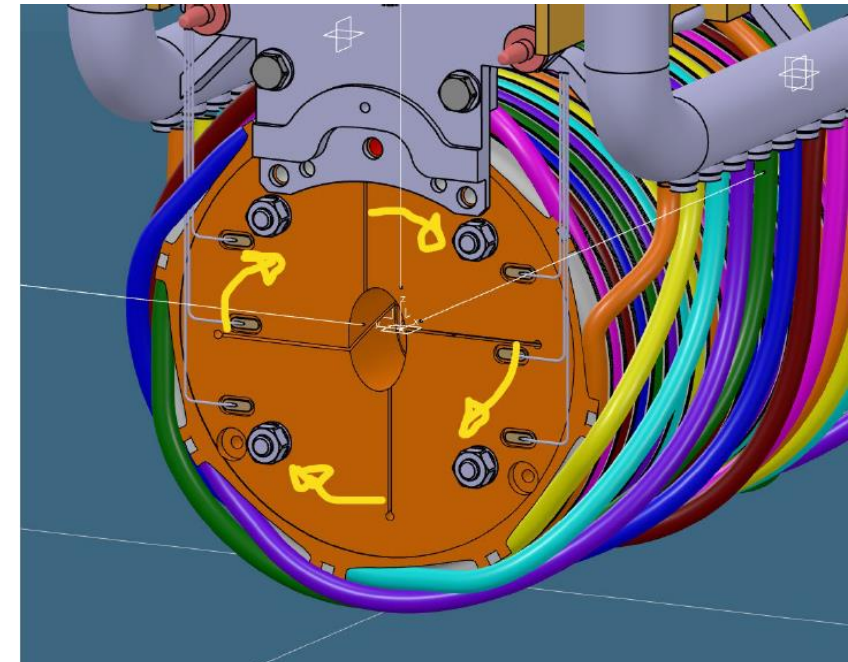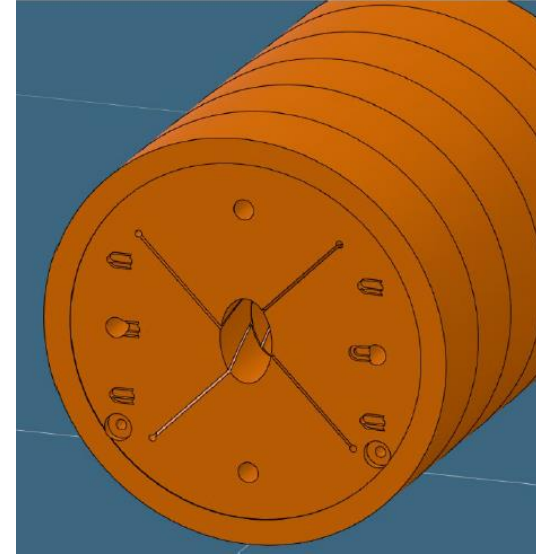
Oscillating Arm Wire Monitor (OAWM)
MDP1/2, MDP3/4 and HIPA 870 keV

1   Prototype being tested, for now tests successful, can easily drive at 4 m/s

2   However we still do not have the final arm which is the „high-tech" part of the instrument

Harps MDH1/2

1. Permanently measure beam profile in front of TATTOOS target
2. Can be bought from e.g. NTG
3. Wires: simulations (next slide)
4. Readout electronics: LogIV32, but:

Evaluate using SoM CAM to replace LogIV for Harps

Fernandez Carmona Pablo
To ☐ Sapinski Mariusz Gracjan; ☐ Rizzi Mattia

Hello Mariusz, Mattia,

I am writing to you with a special request. Could I please ask you to discuss together if SoM CAM would be suitable for replacing LogIV for the Harps in IMPACT?
The background of my request is following. For the IMPACT TDR, AEK decided to use LogIV for Harps, basically the same solution as the existing HIPA devices.
However, afterwards AEK decided to phase out VME at PSI to save money on development VxWorks licenses, so we have a problem.
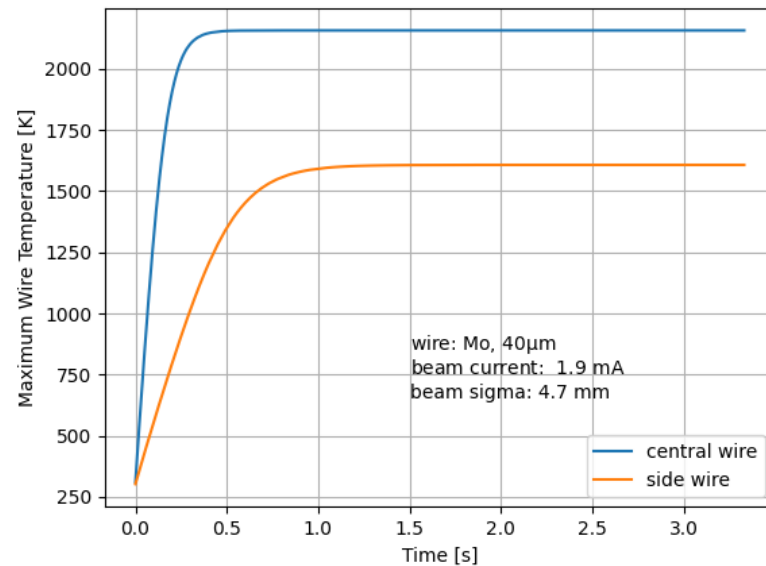Thank you very much, in advance.

Regards,
Pablo
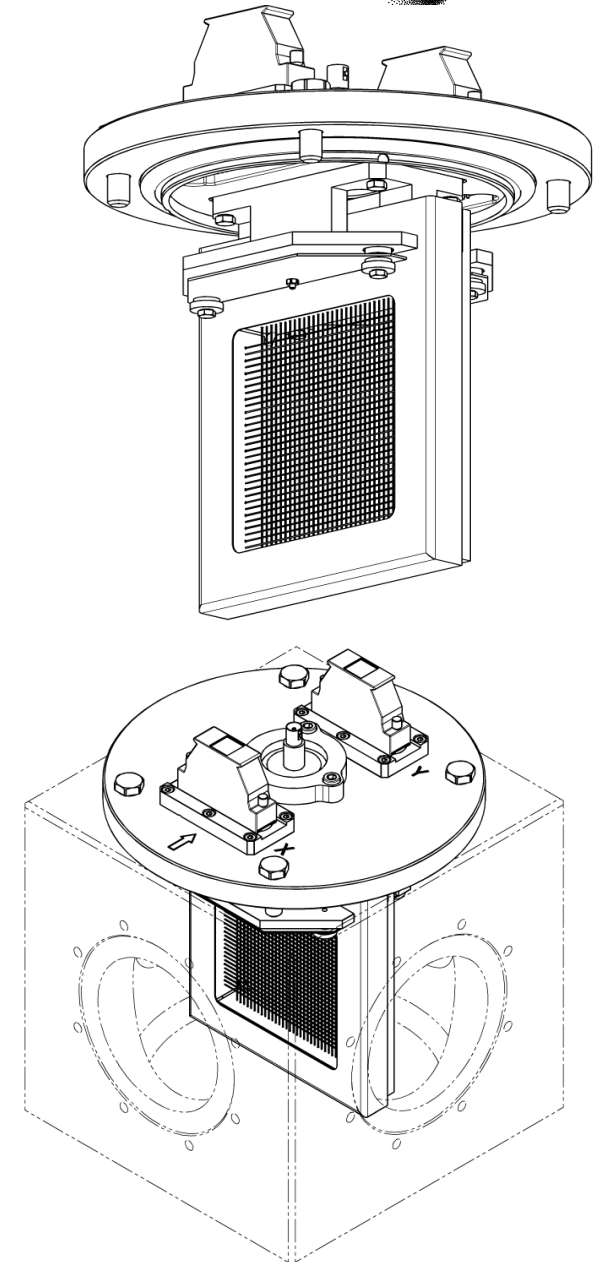
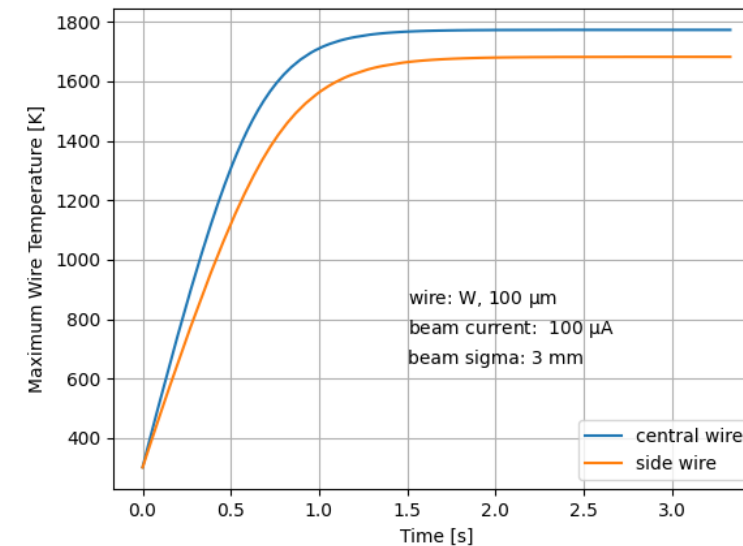# Harps – wire temperature simulation status MDH1/2

1   Running PyTT on UCN harp case

TATTOOS harp:

Thermal equilibrum below
thermionic emission threshold.

Even lower temperatures.