



HEARTS P1 Review Meeting

25 September 2024

<https://indico.cern.ch/event/1411185/>



**Funded by
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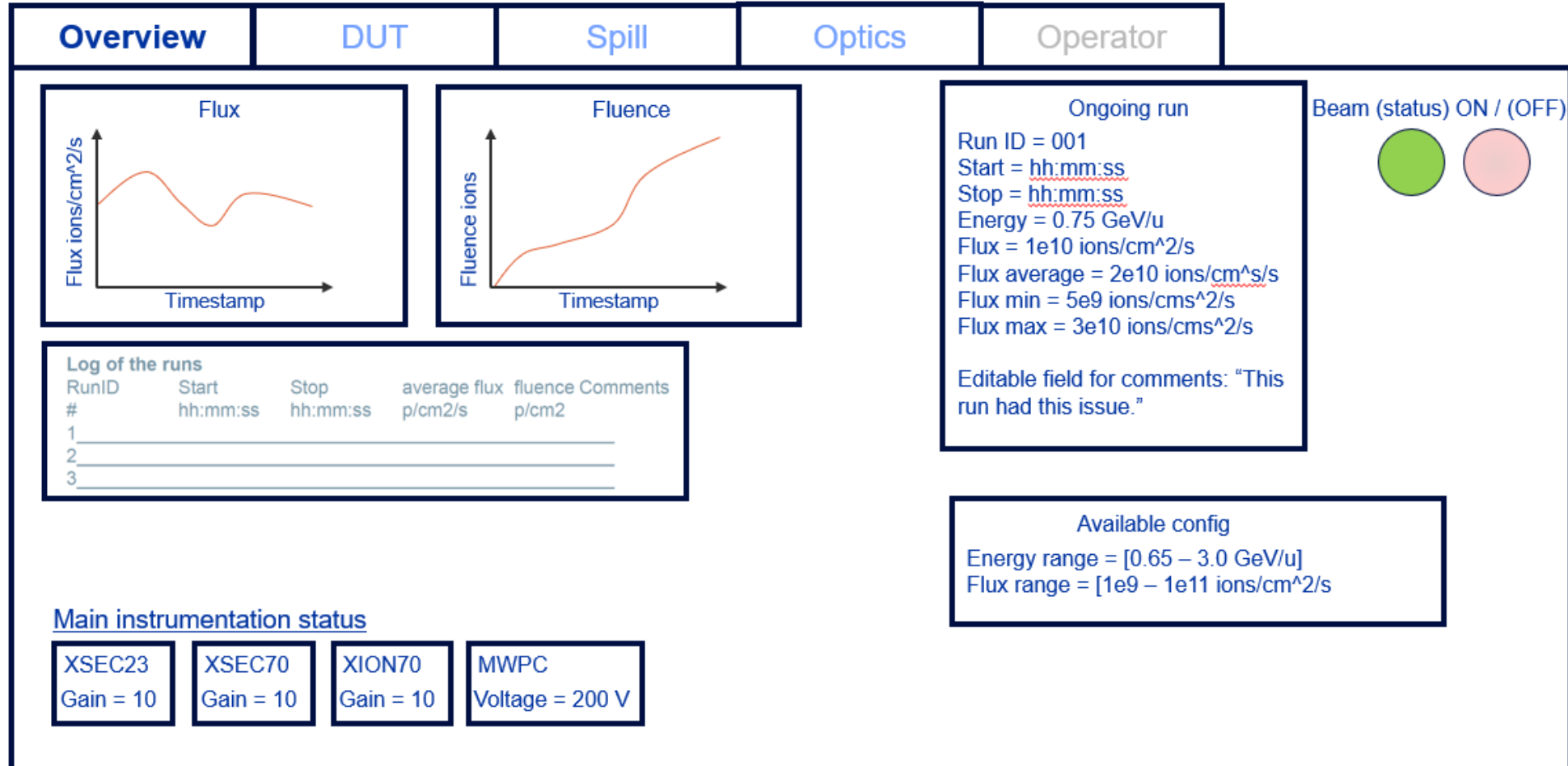
Outline

- The outlook of the WP in P1
- Deliverables and Milestones in P1
- Upcoming Deliverables & Milestones
- Critical Risks & Mitigation Measures in P1
- Identification of new risks

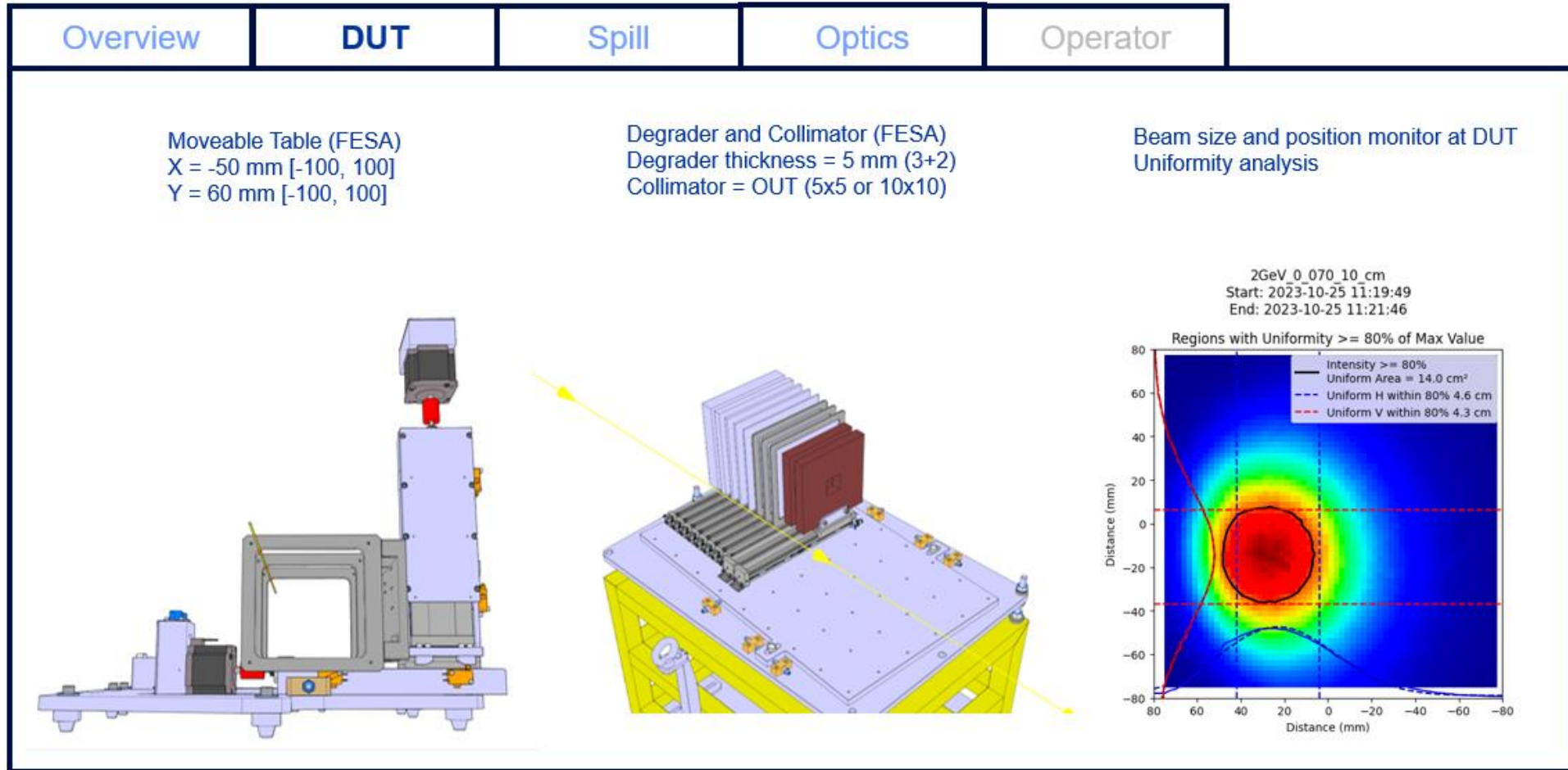
The outlook of the WP in P1

- Task 9.2: User interface tool for experimentation
 - Obtain access to CERN infrastructure
 - Test connection to IRRAD/CHARM T8 beamline
 - Discuss user requirements and use-cases
 - Check means of accessing various FESA properties programmatically
 - Preparation of the development environment
 - Tool selection – which libraries and frameworks to use
 - Proof-of-concept to test the tool selection
- Task 9.3: User experiment lifecycle interface
 - Not started
 - Starts in Sept. 2025

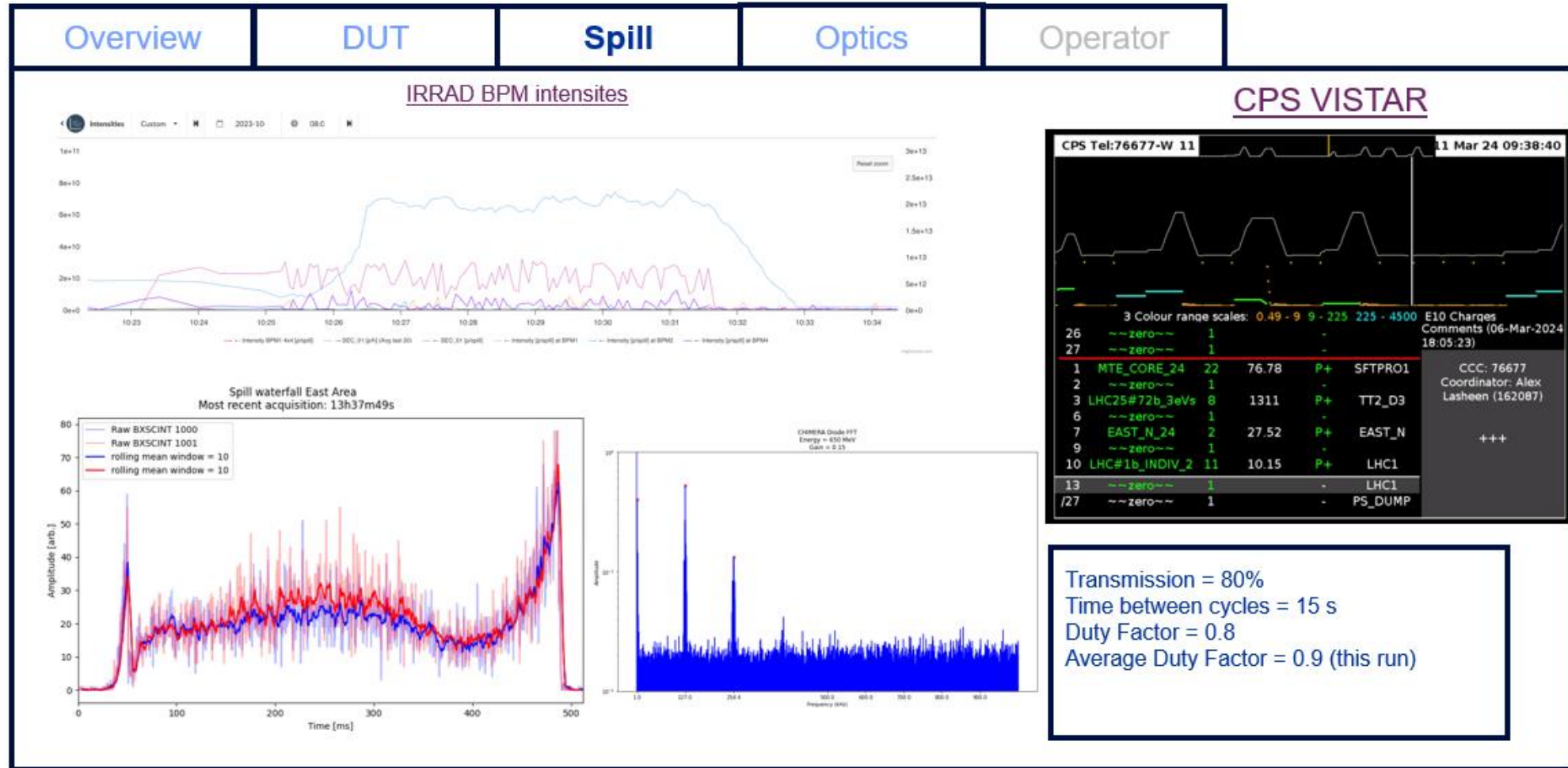
UI Mock-ups – Overview screen



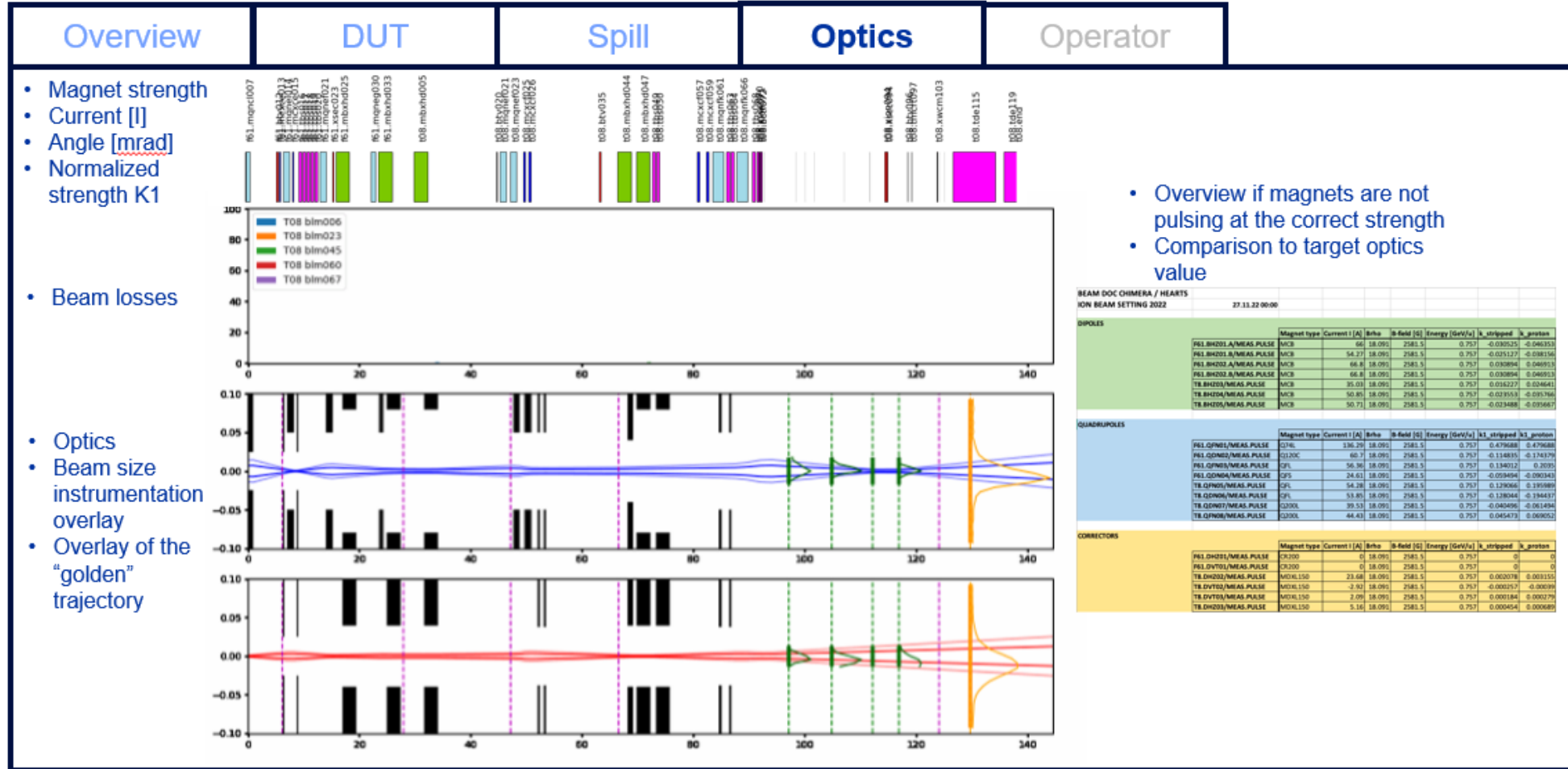
UI Mock-ups – DUT screen



UI Mock-ups – Spill screen



UI Mock-ups – Optics screen



- Overview if magnets are not pulsing at the correct strength
- Comparison to target optics value

BEAM DOC CHIMERA / HEARTS
IOW BEAM SETTING 2022 27.11.22 00:00

Magnet type	Current [A]	Bz [kG]	B-field [G]	Energy [GeV]	k1	stripped	k1_proton
FEL_QP101/MEAS_PULSE	136.29	18.093	2181.5	0.757	0.479681	0.479681	
FEL_QD102/MEAS_PULSE	60.7	18.093	2181.5	0.757	-0.148335	-0.136170	
FEL_QP103/MEAS_PULSE	56.96	18.093	2181.5	0.757	0.134012	0.2035	
FEL_QD104/MEAS_PULSE	24.61	18.093	2181.5	0.757	-0.059494	-0.090343	
TR_QP101/MEAS_PULSE	54.28	18.093	2181.5	0.757	0.129666	0.189889	
TR_QD101/MEAS_PULSE	33.85	18.093	2181.5	0.757	-0.128444	-0.194417	
TR_QD107/MEAS_PULSE	39.53	18.093	2181.5	0.757	-0.040496	-0.061434	
TR_QP101/MEAS_PULSE	44.43	18.093	2181.5	0.757	0.045473	0.069052	

Magnet type	Current [A]	Bz [kG]	B-field [G]	Energy [GeV]	k1	stripped	k1_proton
FEL_DK201/MEAS_PULSE	0	18.093	2181.5	0.757	0	0	
FEL_DK202/MEAS_PULSE	0	18.093	2181.5	0.757	0	0	
TR_DK203/MEAS_PULSE	23.68	18.093	2181.5	0.757	0.002078	0.003155	
TR_DK204/MEAS_PULSE	3.92	18.093	2181.5	0.757	-0.002127	-0.003099	
TR_DK205/MEAS_PULSE	2.09	18.093	2181.5	0.757	0.001184	0.002170	
TR_DK206/MEAS_PULSE	5.16	18.093	2181.5	0.757	0.000404	0.000689	

UI Mock-ups – Operator screen

Monitor 1
Monitor 2
Monitor 3
Monitor 4
Operator

CHIMERA/HEARTS Energy GUI

Selector: Read B-field

Bending angle [mrad]: Current B-field = 5096.0 [G]

Auto trim Dump magnets Ekin = 2.0 [GeV/u]

Brho = 35.712 [GeV/c]

New Ekin [GeV/u]: Set Ekin Set Dump Magnets

Range = [0.65 - 2.7]

Start Ekin [GeV/u]: End Ekin [GeV/u]: Status: Scan in progress

Steps: Repetition: Progress: 33%

Expected End Time: Calculating...

Start scan Stop scan

Values read at 2023-10-13 11:10:32

Gain (Vpp): Gain = 1.0 Vpp

Center of the main frequency (kHz): Center of the main frequency = 152.75 kHz

Range of the main frequency (kHz): Range of the main frequency = 11.75 kHz

Repetition frequency (kHz): Repetition frequency = 0.1 kHz

Write Values The source of the deviation is channel CH2

Read Values

Selector: Get FREV Data

Average B-field in the P5 main bending magnets
CHIMERA nov 2022 run

2023-10-18 20:00:00.000
2023-10-18 23:00:00.000
CPS.USER.MD3

Beam toggle ON / (OFF)

●

●

Target fluence = 5e6

Fluence Stop

Deliverables and Milestones in P1

- WP9 had no deliverables in P1
- There were no milestones affecting WP9 in P1

Upcoming Deliverables & Milestones

Deliv. No.	Deliverable name	Due date	Status
D9.1	User interface tool for beam experimentation	2026-05-31	Pending
D9.2	User experiment lifecycle interface deployment	2026-12-31	Pending

Milest. No.	Milestone name	Due date	Status
MS14	Achievement of TRL6-7 for electronics testing at the CHARM facility	2026-05-31	Pending
MS15	Achievement of TRL6-7 for electronics testing at GSI	2026-05-31	Pending
MS19	Achievement of TRL6-7 for the SIS18 GCR/SPE simulator	2026-05-31	Pending

Critical Risks & Mitigation Measures in P1

- No critical risks affecting WP9 have materialised in P1

Identification of new risks

- No new risks have been identified

Conclusion

- WP9 tasks are proceeding according to plan
- We're still on track for end-of-year prototype testing

**Thank you
for your
attention.
Questions?**



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