Facility for Antiproton and Ion Research
27th Meeting of the FAIR Machine Advisory Committee

Wednesday, November 20, 2024, 12:00 local time (CET)
until Friday, November 22, 2024, 14:00 local time (CET)
FAIR/GSI, Darmstadt, Germany

Agenda*

Day 1: Wednesday, November 20, 2024[†]

Time	Session	Duration
12:00 - 13:00	**Lunch** (by invitation)	(60')
13:00 - 13:15	**Closed session** Chair	(15')
13:15 - 13:20	**Welcome** Chair	(5')
13:20 - 14:00	**FAIR project overview** (R26.1) Jörg Blaurock	(30' + 10')
14:00 - 14:30	**SFRS progress update** (R26.2, R26.5) Haik Simon	(20' + 10')
14:30 - 15:00	**SIS100 quadrupoles update** (R26.3) Peter Spiller	(20' + 10')
15:00 - 15:30	**Break**	(30')
15:30 - 16:00	**SIS100 string test update** (R26.4) Christian Roux	(20' + 10')
16:00 - 16:40	**FAIR controls review follow-up** (R26.6, CO-R1 . . . CO-R6) Ralph Bär	(30' + 10')
16:40 - 17:20	**Performance status/predictions and requirements for ES/FS+** Ralph Assmann, Oliver Boine-F.	(30'+10)
17:30	**End of first day, transport to hotel**	
19:00	**Dinner** (by invitation)	

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*as of October 23, 2024

[†]20'+10' = 20' presentation + 10' questions.

R1,2,3,... = MAC recommendations do be addressed in the presentation. (see Appendix)

P1,2,3,... = MAC requests to be addressed in the presentation. (see Appendix)

Day 2: Thursday, November 21, 2024

09:00 - 09:15	**Closed session** Chair	(15')
09:15 - 09:45	**Technical status and possible upgrade needs for UNILAC** Hartmut Vormann	(20' + 10')
09:45 - 10:25	**SIS18 slow extraction: present and required performance for ES. Implications for SIS100** David Ondreka	(30' + 10')
10:25 - 10:55	**Progress towards commissioning** Stephan Reimann	(20' + 10')
10:55 - 11:20	**Break**	(25')
11:20 - 12:00	**Installation: Status and outlook after 1 year** Harald Hagelskamp	(30' + 10')
12:00 - 13:00	**Lunch** (by invitation)	(60')
13:00 - 15:00	**visit SIS100 tunnel / installation progress**	(120')
15:00 - 18:00	**Committee report writing** (closed session) Chair	(180')
18:00	**End of second day, transport to hotel**	
19:00	**Dinner** (by invitation)	

Day 3: Friday, November 22, 2024

09:00 - 10:00	**Answers to Committee questions** (closed session) Chair	(60')
10:00 - 12:00	**Committee report writing** (closed session) Chair	(120')
12:00 - 13:00	**Close-out session** (open session) Chair	(60')
13:00 - 14:00	**Lunch** (by invitation)	(60')

Appendix: **FAIR MAC-26 Recommendations**

References:
- Report from 26th FAIR Machine Advisory Committee meeting, December 11 - 13, 2023, **EDMS**: 3006305

Introduction and general remarks

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FAIR Project Overview

R26.1: Present project progress against previously presented plans and milestones.

SFRS status and time-line for component completion + SFRS magnet testing and conformity

R26.2: The implementation of mitigation measures to achieve a robust technical solution for the helium leaks in both multiplet and dipole magnets is essential. Solving the technical problem should have priority over schedule considerations.

SIS100 procurement status and perspective for completion of components

R26.3: Continue with the plan to build quadrupoles in industry with high priority until all quadrupoles needed for SIS100 completion are accepted and the risk can be retired.

First experience and results from the SIS100 string test

R26.4: Consider convening a workshop involving all participants engaged in the string test to collectively review findings across various subsystems, contemplate potential additional tests, and discuss the lessons learned and improvements for SIS100 installation, integration, and commissioning.

Power converters manufacturing and installation for First Science

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Status of cryogenics with respect to FAIR baseline and early science
SRFS and SIS100 local cryogenics: WUST contributions

R26.5: Closely monitor progress in execution of local cryogenics for S-FRS and take early corrective action in case of schedule slippage.

LSA set-value generation and implementation of beam-based feedback systems – Operational experience at GSI

R26.6: Define the process of integrating user-developed prototype software into the operational software tools.

Towards a Full Performance Review in the Accelerator Complex for First Science in FAIR (including results of the UNILAC/SIS18 machine beam time)

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Appendix: **FAIR MAC Review on Controls Recommendations**

References:
- Report from FAIR MAC Review on Controls, June 17 - 19, 2024, **EDMS**: 3119442

Needs for FAIR Commissioning for Early and First Science

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Controls Overview and Status at GSI/FAIR, Results from Controls Steering Group

CO-R1: Consider re-starting a body with an emphasis on focusing and prioritizing the controls activities across GSI/FAIR towards ES/FS goals.

Controls Architecture: Overview, Services, Technologies, Interfaces

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Timing System

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LSA Framework and LSA Setting Generation

CO-R2: The committee recommends ensuring adequate resources for managing the ORACLE database. As more rings and transfer lines are added and automated feedback systems are introduced, existing performance issues with parameter trims are likely to become more pronounced.

Industrial Controls Projects and Status

CO-R3: Prioritize the collection of the requirements for SFRS to initiate development and ensure readiness for ES.

Front-End Control Hardware

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Front-End Control Software (FESA)

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Beam Instrumentation and its Controls Aspects

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Control Room Applications and application development process

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OpenDigitizer, OpenCMW, GNU Radio, beam-based feedback systems and its Controls Applications

CO-R4: Evaluating how this system integrates into the control infrastructure, considering all implications such as long-term maintenance, or exploring alternative approaches, necessitates discussions among the responsible team members, guided by management. These discussions should aim to reach a consensus on the preferred course of action, with a clear division of responsibilities, as this decision will have significant long-term impacts on the entire control system and its users.

Python Interfaces and Applications, Controls Requirements for ML/AI

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UNILAC/Injection Controls Upgrade

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CRYRING and HITRAP specific controls

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SFRS specific controls

CO-R5: Discuss between the teams how data from the technical network can be accessed from NUSTAR (and the reverse).

Magnet Protection - Full Stack View

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General Archiving System

CO-R6: The committee considers that the resources allocated to data archiving are not sufficient given the importance of archived data to fully exploit and understand modern machines. The committee considers that this system needs attention, the need for data storage and the list of data sources and performance limitations may be underestimated.

Automated Test Sequences for Commissioning

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