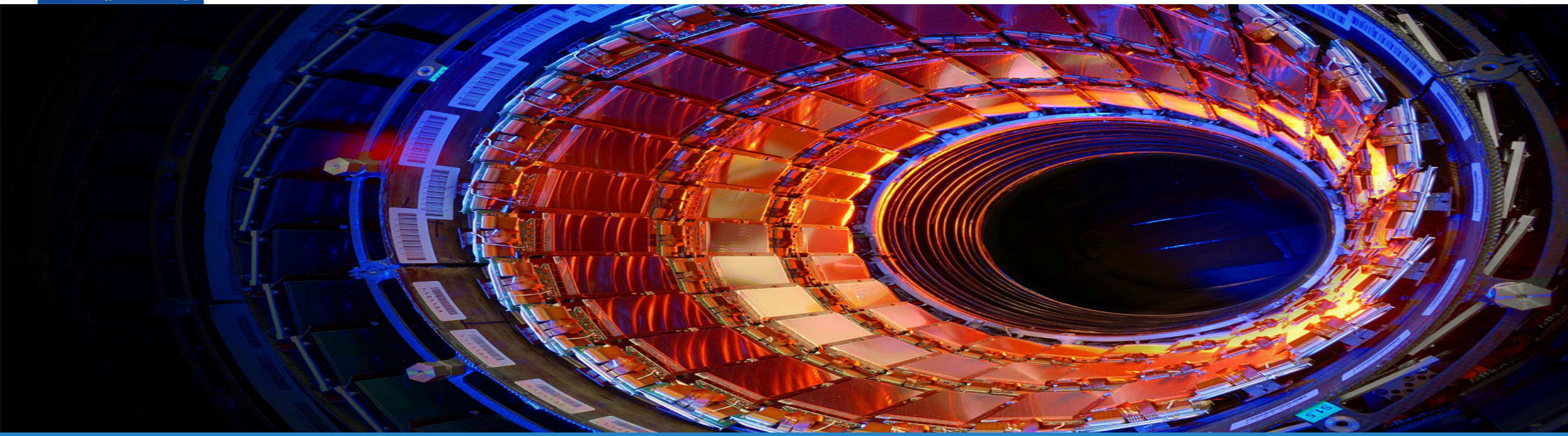
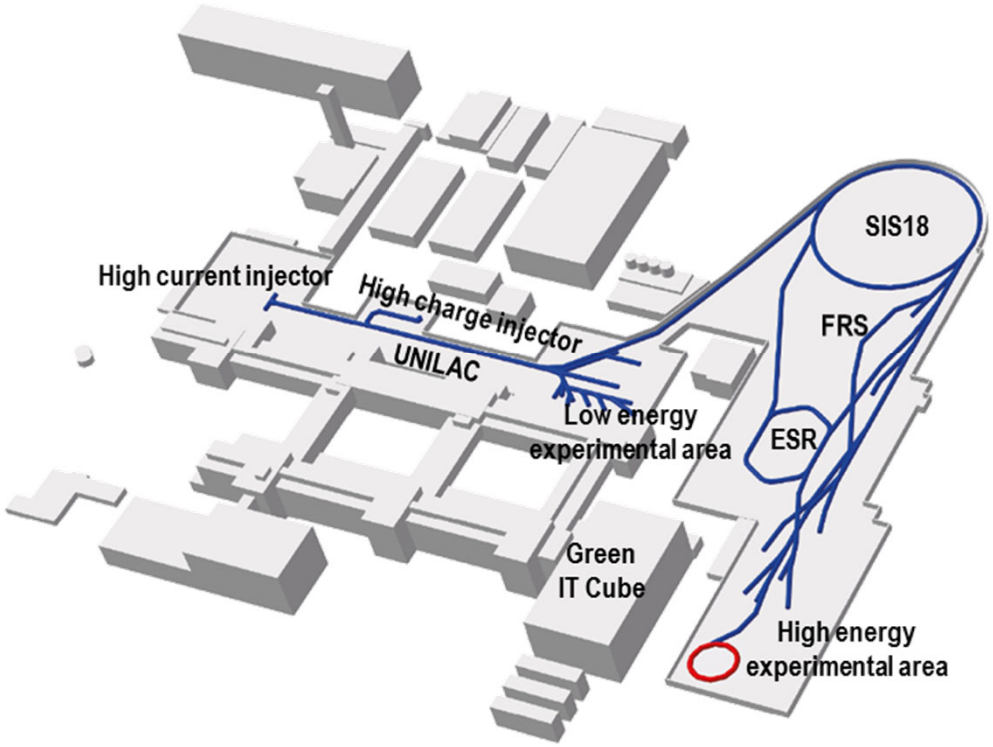


WP5 -Transnational access to GSI

Yvonne Leifels

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 824093

GSI overview accelerators



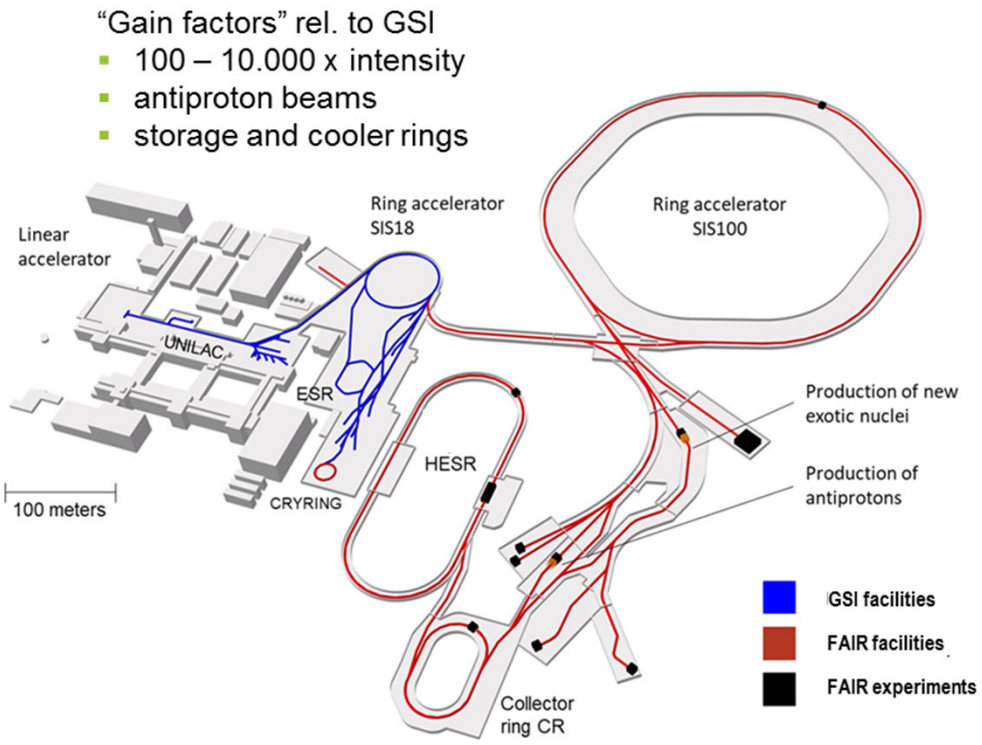
Available beams

- heavy ions upto 2 GeV/u depending on M/Z
- protons upto 4 GeV
- pions 0.4 -2 GeV/c

Research Topics

- nuclear structure, nuclear astrophysics
- atomic physics, plasma physics, biophysics, materials research and applications
- nuclear and quark matter
- hadron physics

FAIR Facility for Antiproton and Ion Research

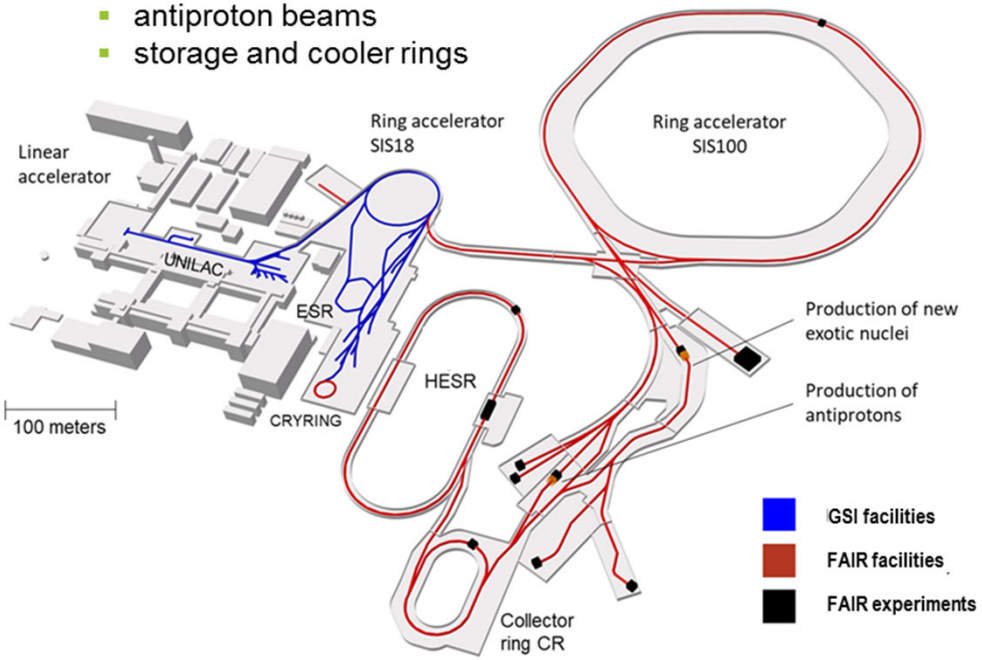


Mission

Completion of FAIR accelerators and detectors together with international partners by 2025

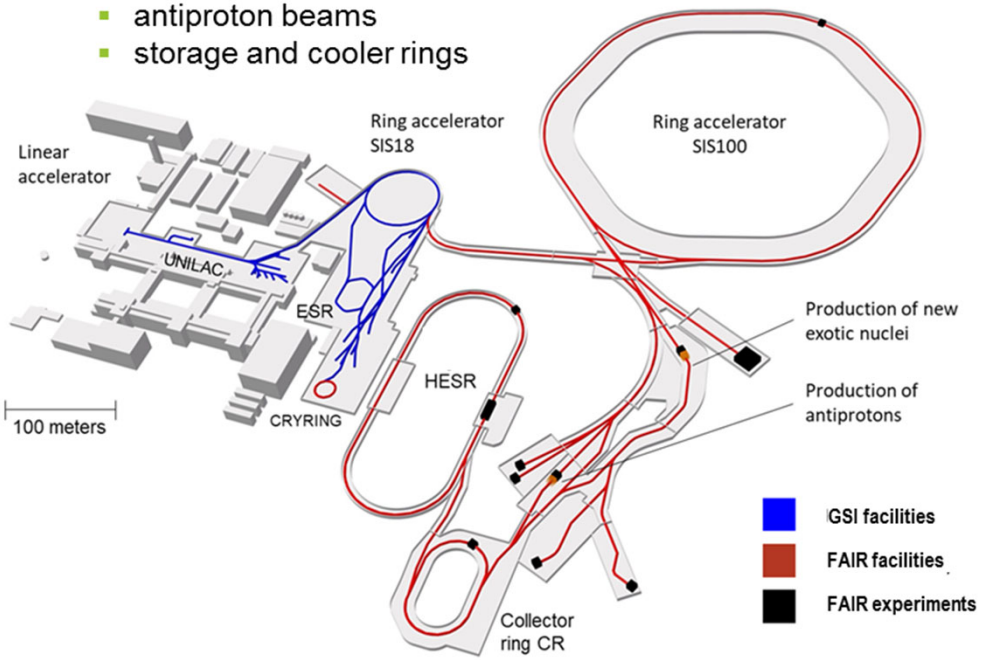
FAIR Facility for Antiproton and Ion Research

"Gain factors" rel. to GSI
- 100 – 10.000 x intensity
- antiproton beams
- storage and cooler rings

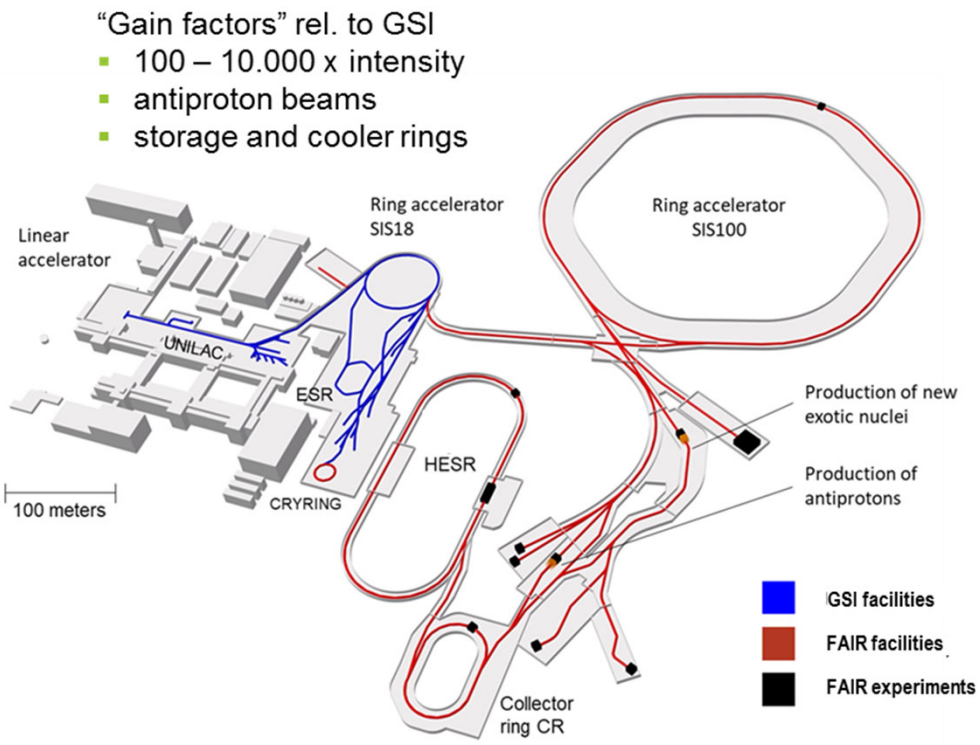


FAIR Facility for Antiproton and Ion Research

"Gain factors" rel. to GSI
- 100 – 10.000 x intensity
- antiproton beams
- storage and cooler rings



FAIR Facility for Antiproton and Ion Research



Mission

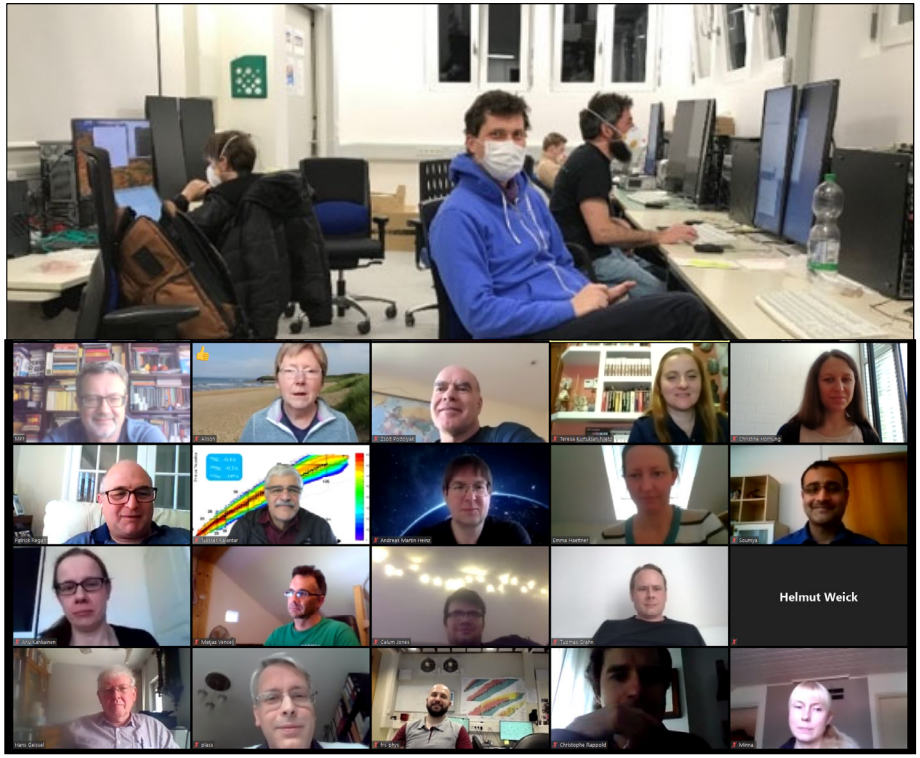
Completion of FAIR accelerators and detectors together with international partners by 2025

Our major activities

- Upgrade of existing GSI accelerators
- Progressively commission upgraded GSI accelerators and newly built FAIR detectors
- Staged approach to FAIR science
- Upgrade the GSI campus for operation at FAIR

Goal: 3 months of beam time/year until start of FAIR operation – **FAIR Phase 0**

Beam time 2020



- Duration three months
- Continuous operation under strict compliance of all safety rules (distancing, masks, etc.)
- Restriction due to COVID-19 did not allow collaborators to travel
  - only remote participation possible
  - no support for setting-up experiments
  - 2/3 of planned experiments were carried out
- NUSTAR experiments had priority in 2020 period
- mCBM experiment (1st of series of CBM detectors)
  - tremenous progress (verified concept of free streaming DAQ)
- **No** requests for TA support
  - **No** beam delivered for STRONG-2020 experiments

WP5: TA to GSI - Deliverables

Milestone	Units / hours beam on target	Days spent at infrastructure	No of users	No of user groups
D7.1 (18 months)	365	440	20	2
D7.2 (36 months)	730	880	40	6
D7.3 (48 months)	1450	1760	80	10

Plan :

1 Work performed from the beginning of the project to the end of the period covered by the report and main results achieved so far

- no access provided

2 List of the Deliverables and Milestones achieved

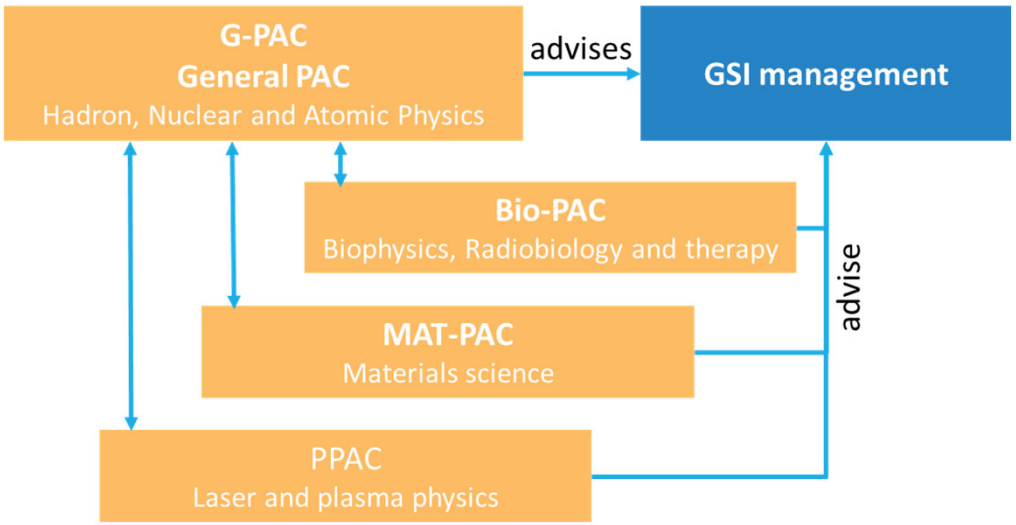
- 1st milestone not achieved

3 Progress beyond the state of the art, expected results until the end of the project and potential impact

- kept GSI accelerator operational until mid of June

Outlook

Program advisory committees at GSI



G-PAC met on August 27th/28th

- Evaluated 98 proposals asking for more than 3300 shifts
- Request 1723 shifts* for SIS18 operation
- Beam time planning for 2021/2022
  - allocation of 421 shifts for SIS18 operation for hadron, nuclear and atomic physics experiments
- Approved STRONG-2020 experiments:199 shifts
  - heavy ion reactions
  - hadron physics
- Applications collected and user selection panel meeting planned for end of October

*1 shift = 8 hours

Outlook

User selection panel at GSI

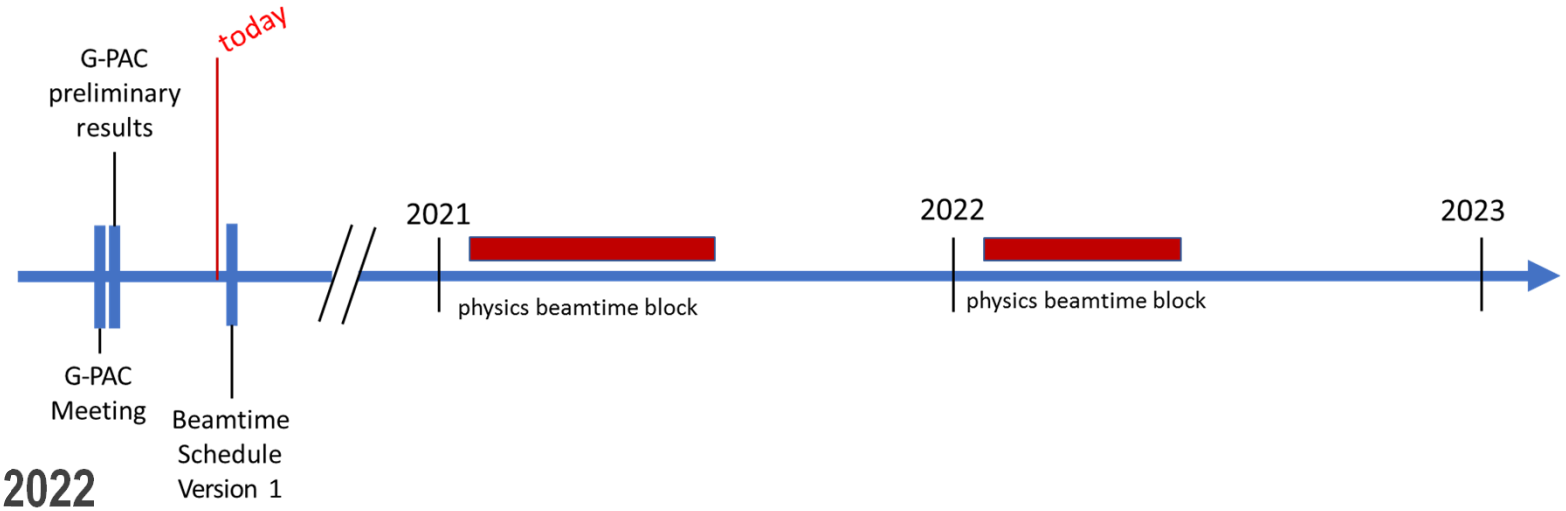
Silvia Masciocchi (GSI)
Kai Brinkmann (Univ. Gießen, PANDA)
Jana Bielcikova (member of G-PAC)
K. Langanke (Research director of GSI)

G-PAC met on August 27th/28th

- Evaluated 98 proposals asking for more than 3300 shifts
- Request 1723 shifts* for SIS18 operation
- Beam time planning for 2021/2022
  - allocation of 421 shifts for SIS18 operation for hadron, nuclear and atomic physics experiments
- Approved STRONG-2020 experiments:199 shifts
  - heavy ion reactions
  - hadron physics
- Applications collected and user selection panel meeting planned for end of October

*1 shift = 8 hours

Outlook

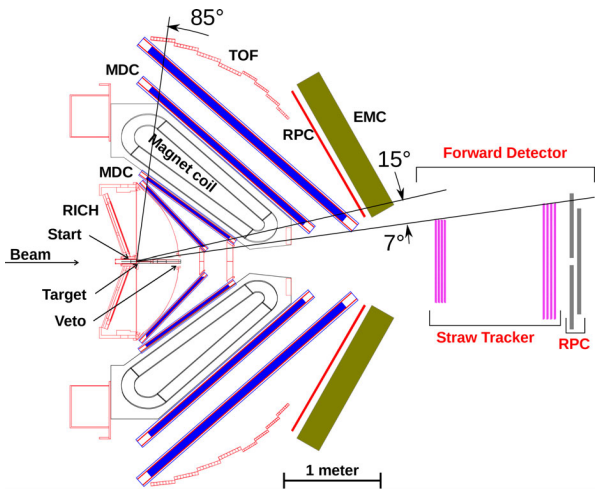


Beyond 2022

- preliminary planning foresees 2023 beam time block in the second half of 2023
- beyond the current project duration (ending 31. May 2023)
- project prolongation by six months would match the actual stops in international travel in 2020

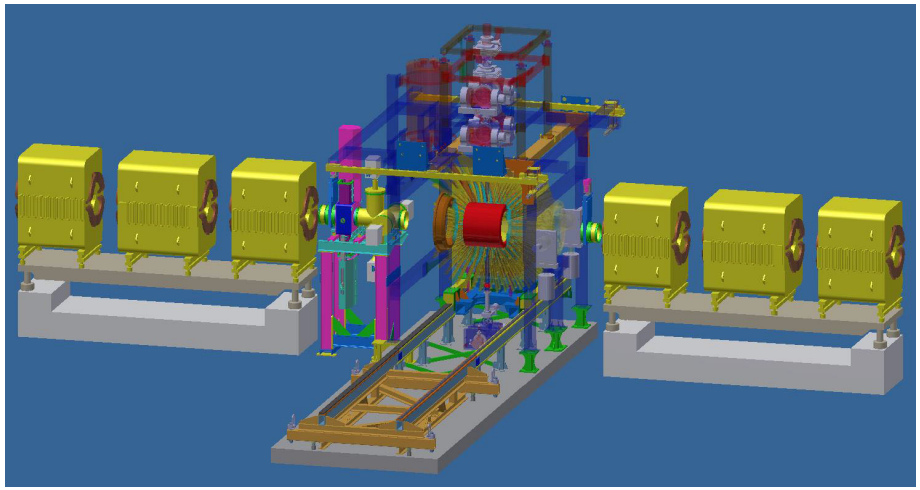
Outlook for 2021/22

HADES upgrade: forward detectors



- forward RPCs by LIB Coimbra
- straw tube tracker by FZ Jülich, UJ Krakow
- elementary p+p reactions

WASA set-up in the fragment separator FRS



- WASA detector for charged particles using FRS as spectrometer
- hypernuclei, resonances in medium, NN interaction

Summary and conclusions

No access provided in the first reporting period

- no beam time in 2019
- 2020 beam time devoted to NUSTAR
- only one active « STRONG-2020 » proposal
- no request for T&S
  - Corona prevented travels of external collaborators

Outlook

GSI will be able to provide >2/3 access until middle of 2023 (nominal end of project)

Conclusion

Project prolongation by at least six months could cover 2023 beam time and GSI would fulfill the milestones

Outlook

Program advisory committees at GSI

G-PAC met on August 27th/28th