

## Transnational Access to GSI

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# Plan of the presentation:

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**1. Progress made during the year towards the objectives**

**2. Minimum quantity of access to be provided at 31 October 2021**

*(Show an estimate of the access that had to be provided to the month 29 according to the GA)*

**3. Access actually provided at 31 October 2021**

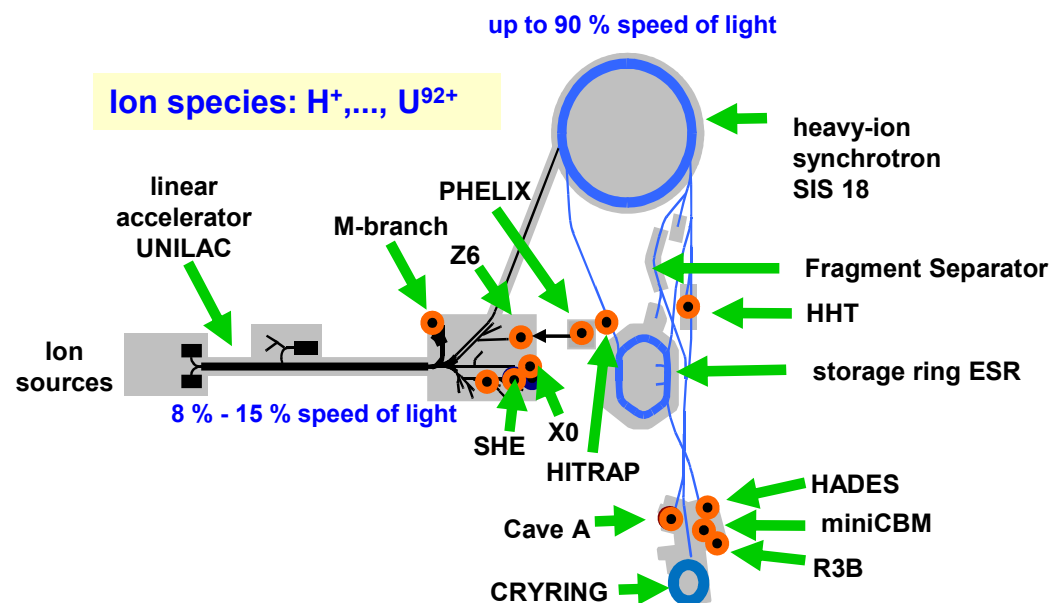
*(Not all travels accounted)*

**4. Other significant achievements**

# GSI – Science while realizing FAIR

Strong response by scientific community, over 1000 scientists involved, demand largely exceeding the available beam time, confirming the attractiveness of the experimental opportunities

- beam times 2020/2021 lasted 3 months / year in the 1<sup>st</sup> half of the respective year
- 2021 beam time has been performed as planned
- beam times in 2023 / 24 (3 months / year) will be assigned in a G-PAC Meeting in August 2022



# 1. User selection panel

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## User selection panel at GSI

Philip Crochet (member of the G-PAC, Clermont Ferrand)

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 (including A-)
  - heavy ion reactions
  - hadron physics
- Applications collected and user selection panel meeting took place in December 2020

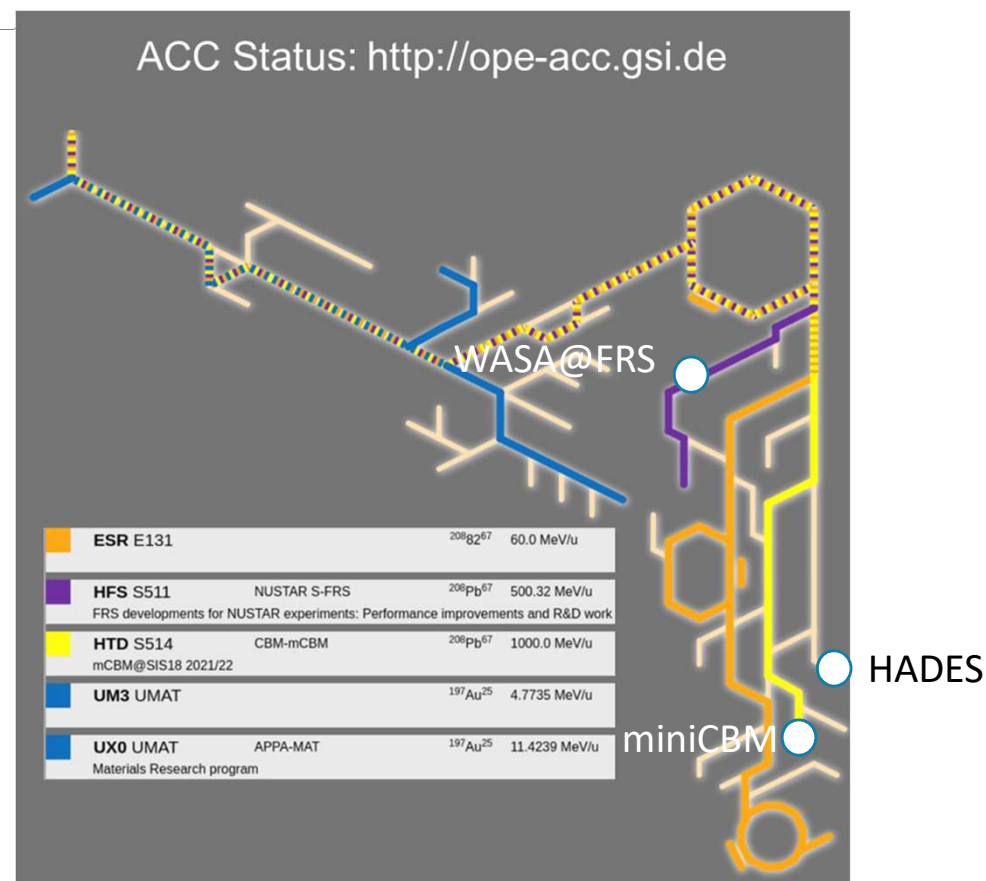
\*1 shift = 8 hours



# 1. Accelerator progress in 2021

Relevant for STRONG-2020 related projects

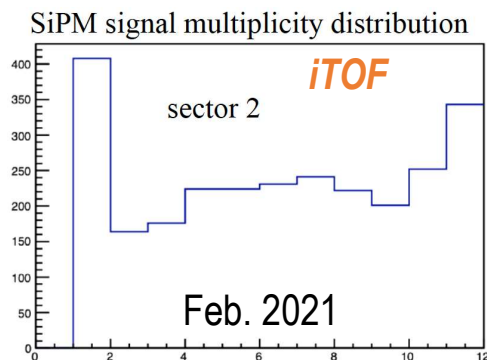
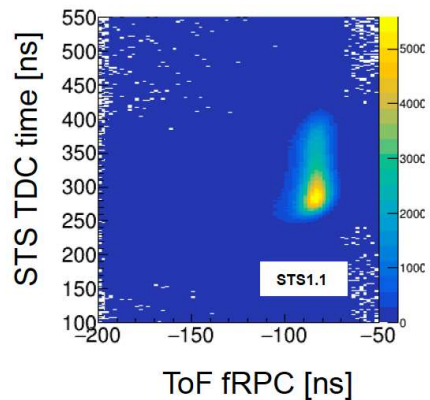
- Ion source stability improved → longer lifetime, less interruptions
- Up to 4 ion species in parallel operation established
- SIS18 chimney-function for all beam paths implemented to achieve a better parallel performance for SIS18 users
- New RF system allows SIS routine operation with reduced injection energy from UNILAC to highest possible extraction rigidity
- HEST beam-line-optics improved → faster setup, better transmission (SIS18-miniCBM, HADES)
- Parallel operation carbon and proton (high current, from one source) established
  - needed for HADES and WASA experiments
- SIS18 septum PS changed → voltage increased close to nominal value <> nominal extraction angle → less losses during extraction
  - essential for all high rigidity – high intensity experiments



# 1. Progress at HADES

**Production and decay of strange resonances:** eTFF's  $\Lambda$ ,  $\Sigma$   
 PANDA Forward Tracker  $\rightarrow$  HADES Straw tube tracker for improved **HYPERON** acceptance in forward direction

- **STS1** and 2 sectors of **iTOF** installed and operational
- All straws work properly, good coincidences STS – fRPC
- Calibration and tracking on track
- Complete installation in Nov. 2021 for beam time 2022



**STS2**

Jagiellonian Univ.



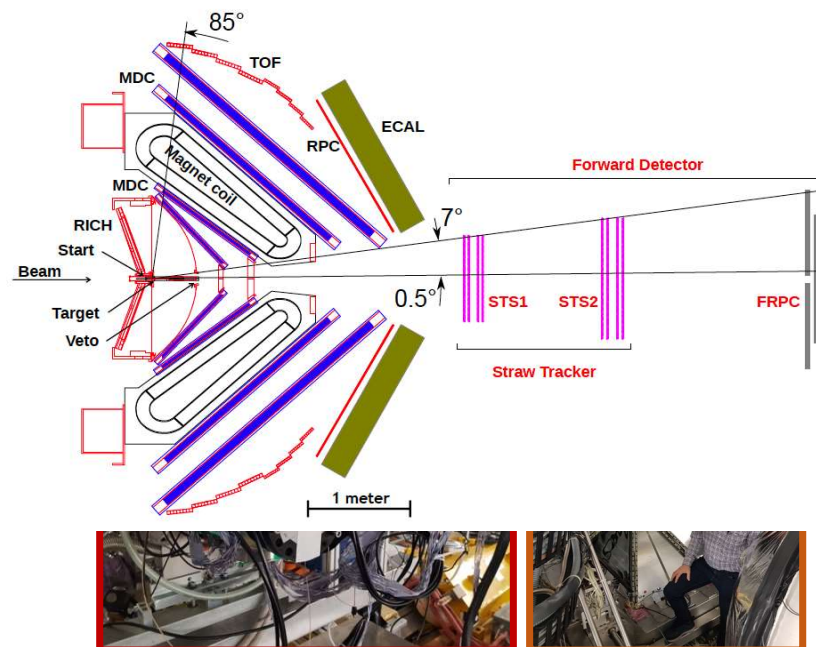
**STS1**

TransFAIR, Jülich



**Forward RPC**

LIP Coimbra



# 1. Progress at WASA@FRS

## Programm of WASA@FRS

**Hyper nuclei:**  $nn\Lambda$ ,  ${}^3_{\Lambda}H$ ,  ${}^4_{\Lambda}H$

**Hadron physics:** search for eta-prime mesic nuclei

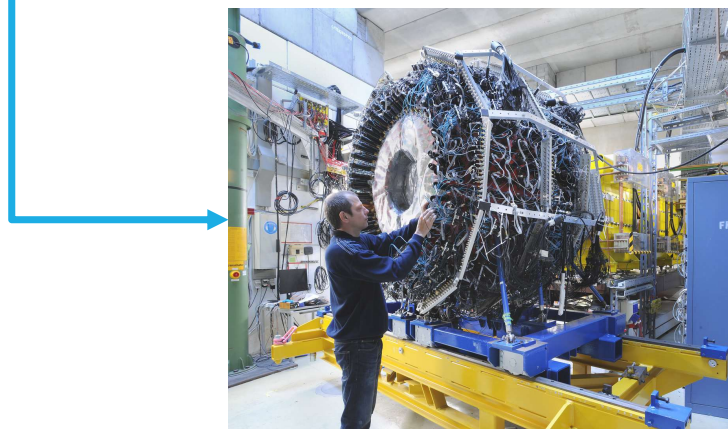
Superconducting solenoid magnet of the WASA central detector taken into operation

Development of arrays of scintillating fiber detectors from High Energy Nuclear Physics Laboratory at RIKEN,

Upgrade of the existing Time-of-Flight detector at Meson Science Laboratory of RIKEN

Development of Si vertex detectors at CSIC-Madrid.

Transport of WASA to FRS in October 2021



## 2. Minimum quantity of access

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Only test or parasitic beam times took place for HADES and miniCBM in 2021

	<i>Estimated in proposal / estimated hours</i> of beam time	Estimated in proposal / <i>estimated number</i> of days spent in infrastructure
Month 1-18	500	660
Month 19-36 / <b>Month 19 - 29</b>	600 / <b>100</b>	660 / <b>100</b>
Month 1-48	1450	1760



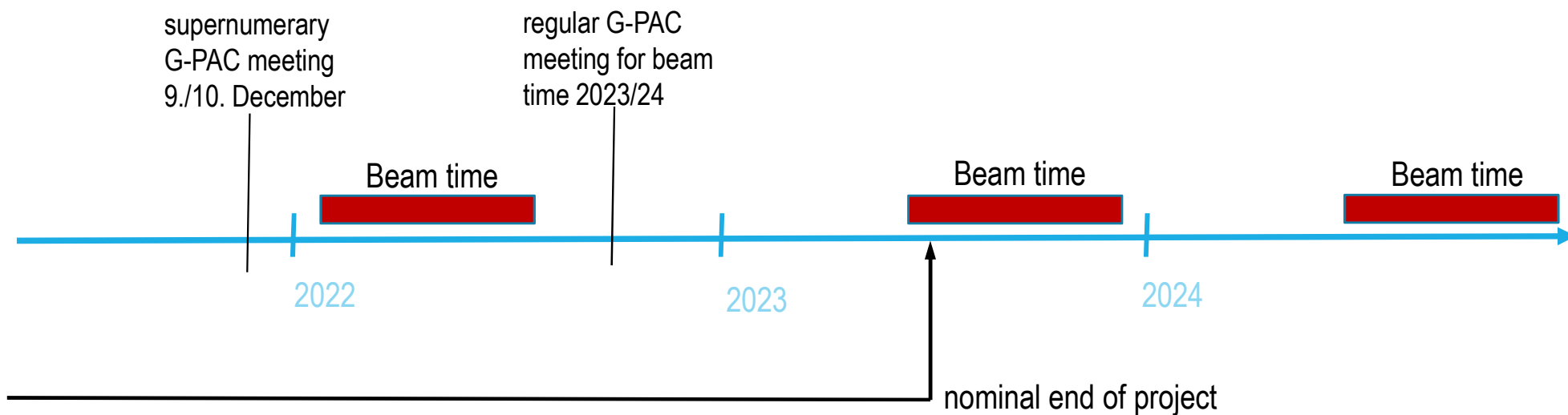
### 3. Actual quantity of access provided

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Since the relevant beam times took place already beginning of the year, a smaller number of scientists than expected traveled to GSI due to Corona restrictions

	<i>Estimated / delivered hours of beam time</i>	<i>Estimated / supported number of days spent in infrastructure</i>
Month 1-18	500 / 0	660 / 0
Month 19-29	100 / 60	100 / 60
Month 30-36	500	560
Month 1-48	1450	1760

# 4. Outlook 2022 / 23



## 4. Outlook for 2022 / 23

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Beginning of 2022

more than 1000 hours of beam time are attributed to STRONG2020 related projects

major construction works are starting in November

	<i>Estimated / delivered</i> hours of beam time	Estimated / supported number of days spent in infrastructure
Month 1-18	500 / 0	660 / 0
Month 19-29	100 / 60	100 / 60
Month 30-36	500 / 800	560
Month 1-48	1450 / +480	1760



## 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) if travel restrictions come to an end

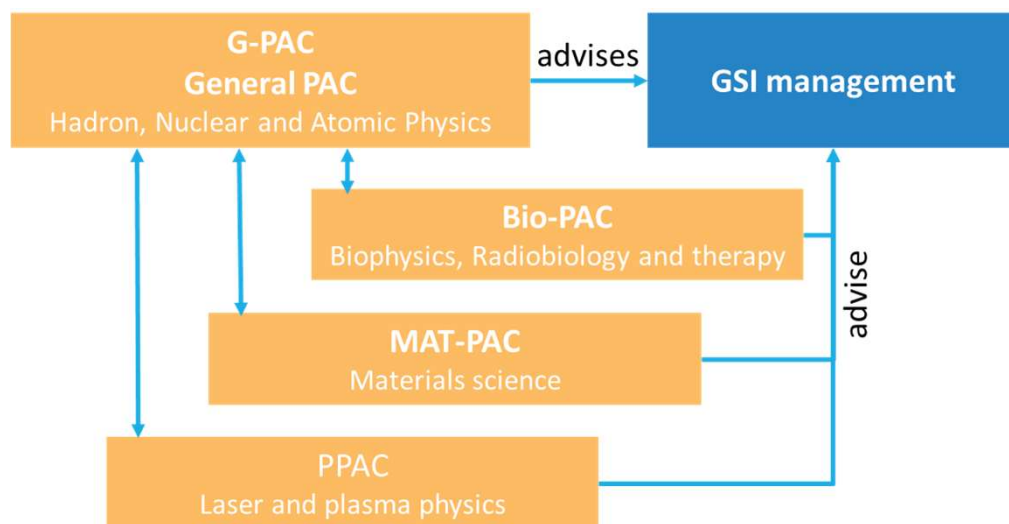
### Conclusion

Project prolongation by at least six months could cover 2023 beam time and GSI might be able fulfill the obligations



# Outlook

## Program advisory committees at GSI



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# Outlook

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