

# Facility for Antiproton and Ion Research in Europe (FAIR)

@BSBF 2022 - 05. October 2022

**Jörg Blaurock**

Technical Managing Director FAIR GmbH und GSI GmbH

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2022

**We explore  
the universe...**

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**GSI**

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**...in the lab.**

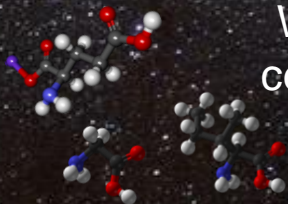
Where are chemical elements produced?



What does matter look like in the most heavy objects of our universe, the neutron stars?



What happens to human cells on the way to Mars?



How are complex molecules formed?



How do materials behave under high pressure?



# The 4 scientific pillars at FAIR

## **NUSTAR**

Nuclear Structure, Astrophysics and  
Reactions: Stars and nuclei

## **CBM**

Compressed Baryonic Matter:  
Inside a neutron star

## **PANDA**

Antiproton-Annihilation at Darmstadt:  
Antimatter research

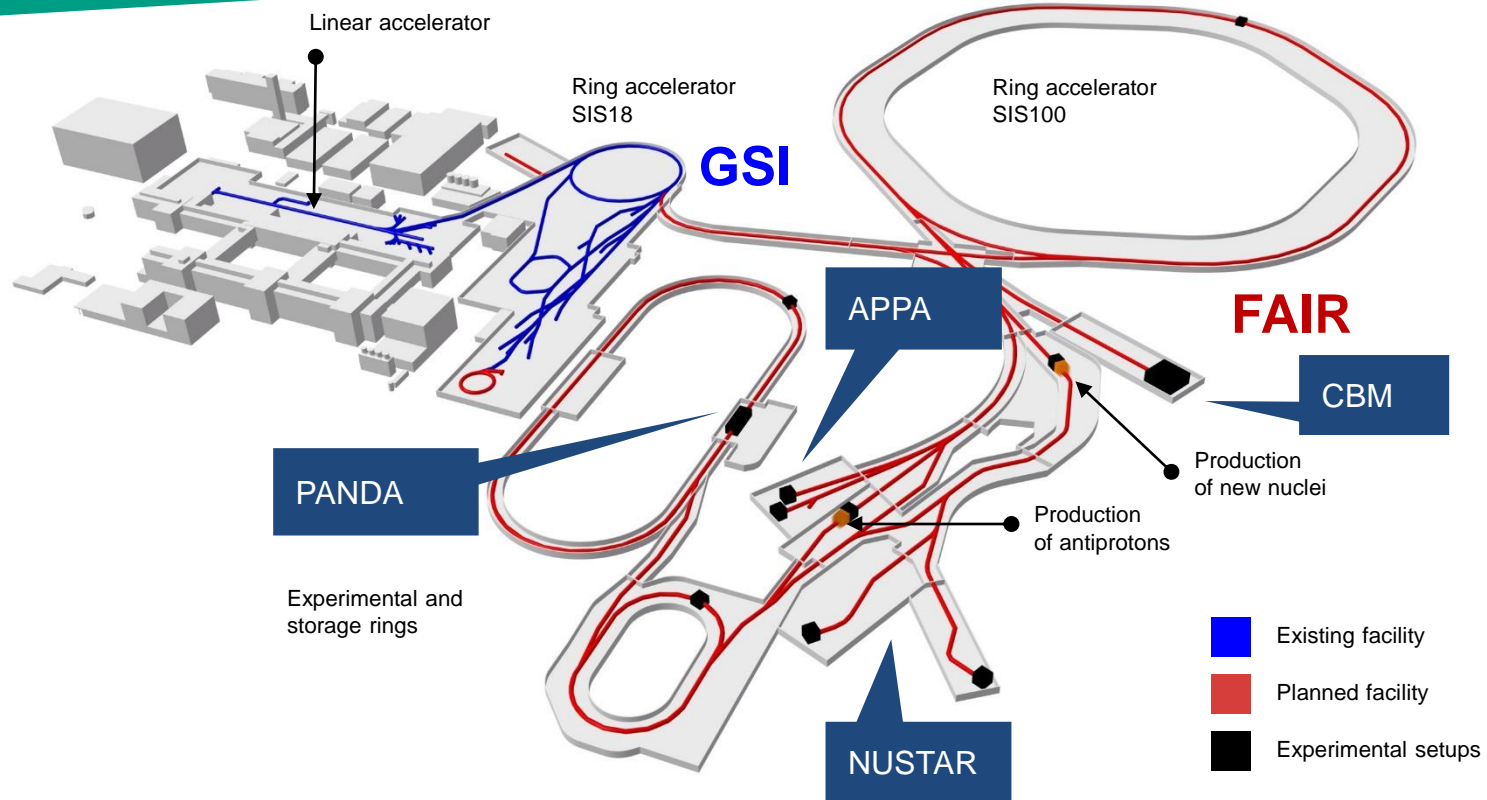
## **APPA**

Atomic, Plasma Physics and Applications:  
From atoms to planets to cancer research

A photograph showing a man in a black shirt and glasses working on a complex, multi-layered detector system. He is using a red-handled tool to adjust a component. The system is filled with numerous colorful cables (blue, green, red, yellow) and various electronic modules. The background shows the metallic structure of the detector, with a central cylindrical component and various support structures.

# Research with forefront detector technology

# The Facility

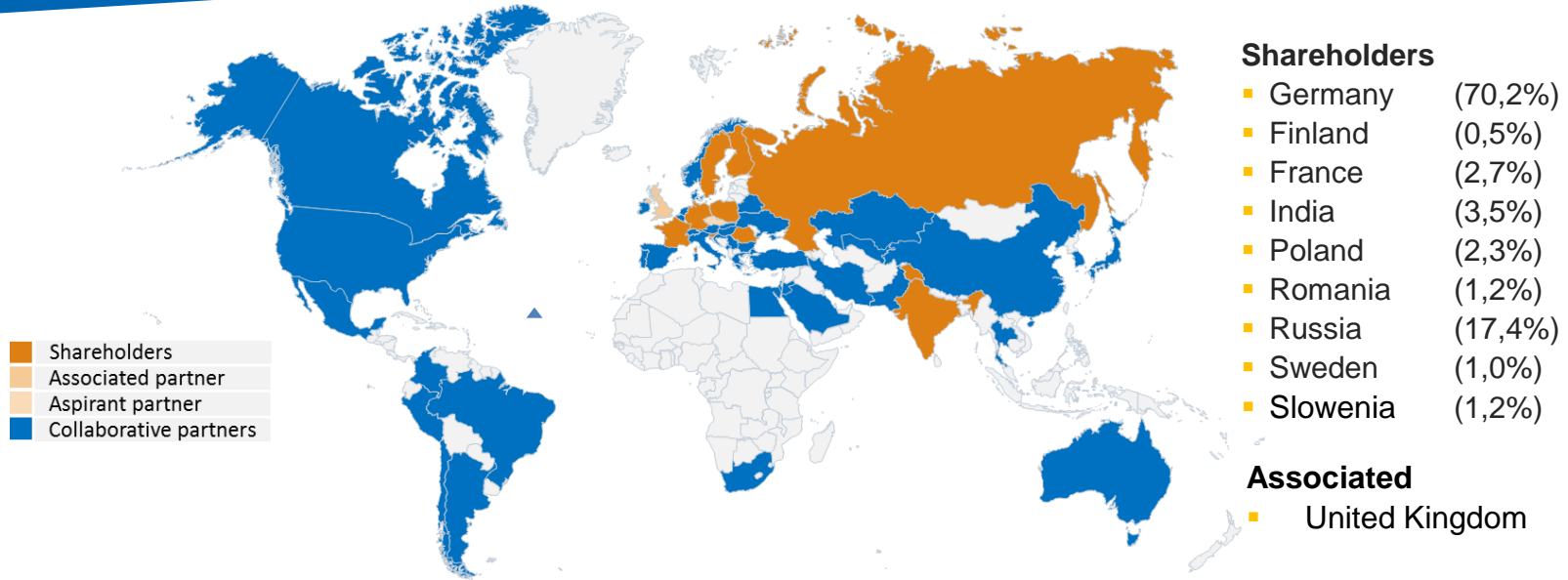


- **25 accelerator and experimental structures, labs and other operation and supply structures**
- **Underground accelerator ring with a circumference of approx. 1,100 m**
- **Around 150,000 m<sup>2</sup> of total area**

- World-leading accelerator laboratory for decades
- Unique research in physics and applications

- Milestone in the European research roadmap (ESFRI)
- Top priority in the European nuclear physics community

# Shareholders and Scientific partners worldwide



- Realization and operation with international cooperations
- Cooperation with around 400 institutes in more than 50 countries
- 1,580 employees on the FAIR/GSI campus in Darmstadt



# FAIR facility - worldwide production and delivery of accelerator components and experiments



HEBT: Dipole-Magnets



Power  
Converters



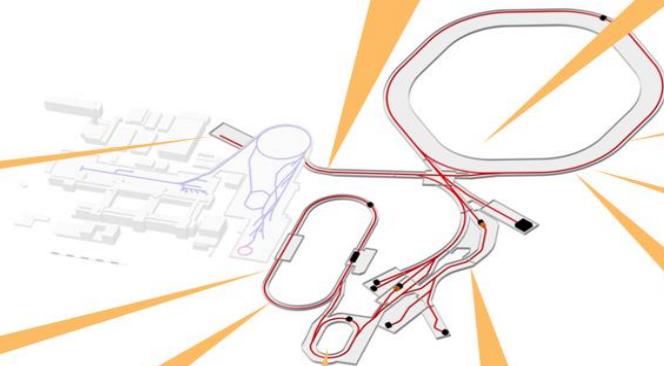
SIS100: Quadrupol-Magnet



SIS100: Vacuum Chambers



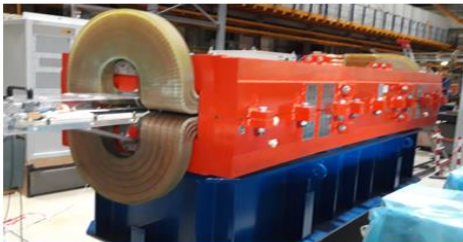
SIS100: Dipole-Magnet



p-Linac: RFQ- Development



HESR: Quadrupol-Magnets



HESR: Dipole-Magnet



CR: Dipole-Magnet



SFRS: Multiplet-Magnet CERN test facility

# FAIR Highlights - Storage Area Weiterstadt

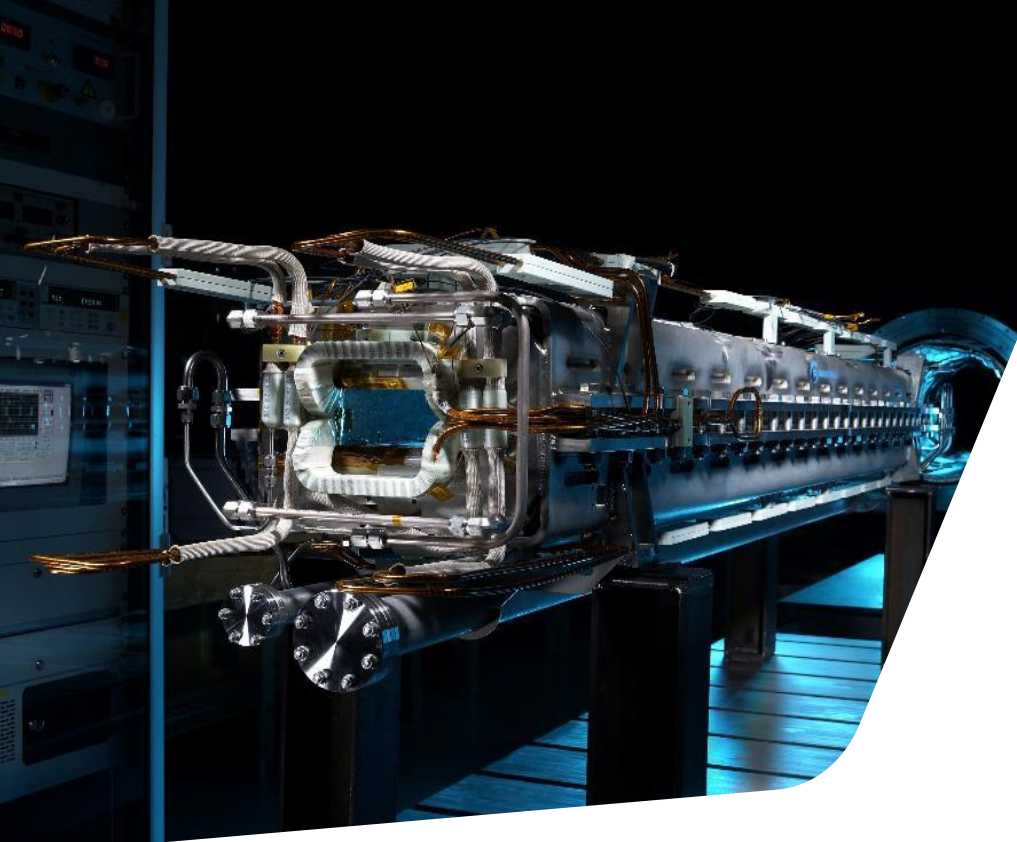
Completed and delivered high-tech components accelerator and experiments

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- Storage area: approx. 9.900 m<sup>2</sup>
- 4.195 objects (Components, assemblies, boxes, etc.)
- 50% of SIS100 components stored
- 90% of HESR components stored





- **Superconducting magnets:** for strong and rapidly changing magnetic fields with maximum field precision
- **Sophisticated cryotechnology:** Use of liquid helium to cool down to 4 Kelvin ( $-269^{\circ}\text{C}$ )
- **Ultra-high vacuum:**  $10^{15}$  times below the earth's air pressure
- **Development and construction of cryo-collimators with special coatings**

**Development and use of globally unique cutting-edge technology**

# FAIR Construction Site

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Mai 2022

# SIS100-Tunnel

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August 2022

# Experiment Buildings

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August 2022

# Technical Building Installation

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August 2022

# Technical Building Installation



September 2022



# Technical Building Installation



September 2022

# FAIR's procurement opportunities for industry partners

Technology	Estimated expenditure (M€)
Cryogenics, vacuum and leak detection technologies	55
Diagnostics and detectors, sensors, optics and instruments	35
Electrical, power electronics, electromechanical and RF systems	43
High precision and large mechanical components	10
Instrumentation, control and CODAC	34
Superconductivity and superconducting magnets	25
Normal conducting magnets	30
Remote handling	7



Current  
procurements

# Matching your skills to our needs

- FAIR experts will present our procurement needs in the following parallel sessions:

Session	Technology	Our speaker
C3	Cryogenics, vacuum and leak detection technologies	Andreas Krämer
A1	Electrical, power electronics, electromechanical and RF systems	Harald Klingbeil
C1	High precision and large mechanical components	Christina Will
D4	Remote handling	Christos Karagiannis
D2	Superconductivity and superconducting magnets	Christian Roux

- Use the conference app to arrange 1-to-1 meetings with our technical experts above, as well as our procurement experts:



David Urner  
David.Urner@fair-center.eu



Sonia Utermann  
S.Utermann@gsi.de



# Matching your skills to our needs

- Please visit our exhibition stand up on the second floor: we have someone there at all times.
- Check out our technology transfer proposals in the dedicated TT sessions, or arrange a meeting with our TT representatives:



Tobias Engert



Martina Bauer

- Use BSBF as an opportunity to find consortial partners
- Check our current procurements:  
[https://www.gsi.de/en/start/business\\_industry](https://www.gsi.de/en/start/business_industry)



Current  
procurements

- We buy the vast majority of our needs in open competition
- We have no principle of *juste retour*: the most competitive offer wins, regardless of nationality or EU membership.

## Here's what you need to do:

- Present your portfolio and references to the FAIR/GSI team or send them to our industry contact officer: [s.utermaann@gsi.de](mailto:s.utermaann@gsi.de).
- Check our website for upcoming procurements
- Please contact your country's industry liaison officer. It is their job to advocate for you.
- Reach out to other companies in your country. Consider consortia.
- If you are based in one of our shareholder countries: check the tenders of your country's shareholder (see the BSBF procurement handbook)



Current  
procurements

- FAIR has exciting procurement opportunities in technologically challenging fields
- We are looking for development collaborators as well as suppliers
- We have upstream and downstream innovation opportunities for ambitious companies
- Our technical and procurement experts are here in Granada ready to meet you
- FAIR relies on companies like you to help us bring the universe into the laboratory
- I wish us all a successful meeting doing good business together!



***Thank you for your attention!***