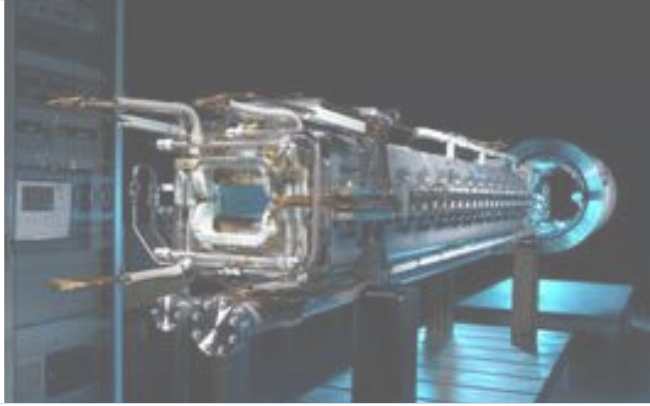




NUSTAR Construction MoU status

12th FAIR-NUSTAR Resources Review Board
FAIR/GSI, Darmstadt, Germany

Alexander Herlert
NUSTAR Resource Coordinator
FAIR

Finland France Germany India Poland Romania Russia Slovenia Sweden UK Czech Republic

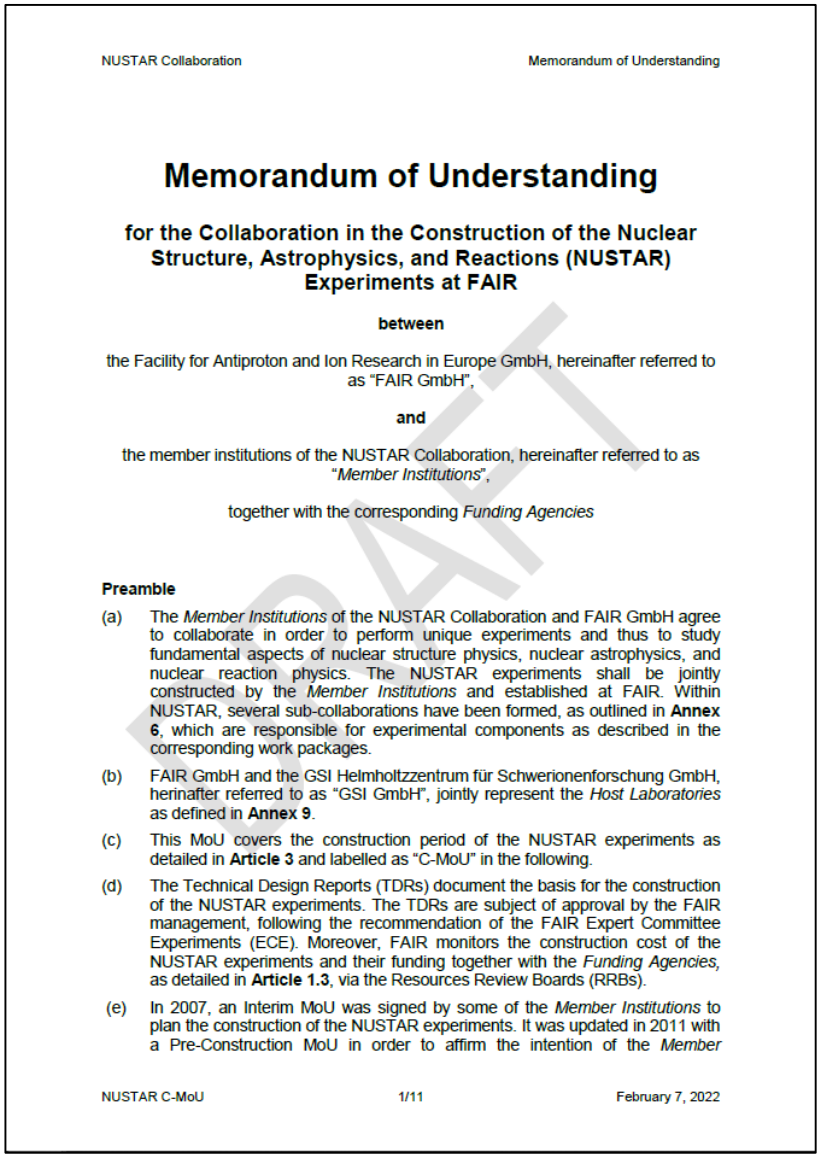
FAIR

Outline

- **NUSTAR Construction MoU**
  - Status of Construction MoU
    - o New structure of Annex
    - o Implementation of new FAIR staging steps
    - o Russian institutes suspended
  - Construction Common Fund and cost-sharing (Annex 8)
    - o Updated expenditure plan due to new timeline
    - o Updated NUSTAR member list
    - o Updated cost-sharing (contribution per senior member)

NUSTAR Construction MoU – first version

- NUSTAR Construction MoU
  - NUSTAR C-MoU **adapted to the one from CBM**
  - Version from December 17, 2021
    - **endorsed** by NUSTAR Council (Collaboration Board)
    - **submitted to ECSG** and comments received and changes implemented in new version
    - **submitted to all Member Institutions** to get first feedback – minor modifications to main text and annexes for new version
  - Version from February 7, 2022
    - **submitted to FAIR-RRB**
    - Discussed at 11th FAIR-RRB



NUSTAR Collaboration Memorandum of Understanding

Memorandum of Understanding

for the Collaboration in the Construction of the Nuclear Structure, Astrophysics, and Reactions (NUSTAR) Experiments at FAIR

between

the Facility for Antiproton and Ion Research in Europe GmbH, hereinafter referred to as "FAIR GmbH",

and

the member institutions of the NUSTAR Collaboration, hereinafter referred to as "*Member Institutions*",

together with the corresponding *Funding Agencies*

DRAFT

Preamble

(a) The *Member Institutions* of the NUSTAR Collaboration and FAIR GmbH agree to collaborate in order to perform unique experiments and thus to study fundamental aspects of nuclear structure physics, nuclear astrophysics, and nuclear reaction physics. The NUSTAR experiments shall be jointly constructed by the *Member Institutions* and established at FAIR. Within NUSTAR, several sub-collaborations have been formed, as outlined in **Annex 6**, which are responsible for experimental components as described in the corresponding work packages.

(b) FAIR GmbH and the GSI Helmholtzzentrum für Schwerionenforschung GmbH, herinafter referred to as "GSI GmbH", jointly represent the *Host Laboratories* as defined in **Annex 9**.

(c) This MoU covers the construction period of the NUSTAR experiments as detailed in **Article 3** and labelled as "C-MoU" in the following.

(d) The Technical Design Reports (TDRs) document the basis for the construction of the NUSTAR experiments. The TDRs are subject of approval by the FAIR management, following the recommendation of the FAIR Expert Committee Experiments (ECE). Moreover, FAIR monitors the construction cost of the NUSTAR experiments and their funding together with the *Funding Agencies*, as detailed in **Article 1.3**, via the Resources Review Boards (RRBs).

(e) In 2007, an Interim MoU was signed by some of the *Member Institutions* to plan the construction of the NUSTAR experiments. It was updated in 2011 with a Pre-Construction MoU in order to affirm the intention of the *Member*

NUSTAR C-MoU 1/11 February 7, 2022

Feedback from funding agencies …

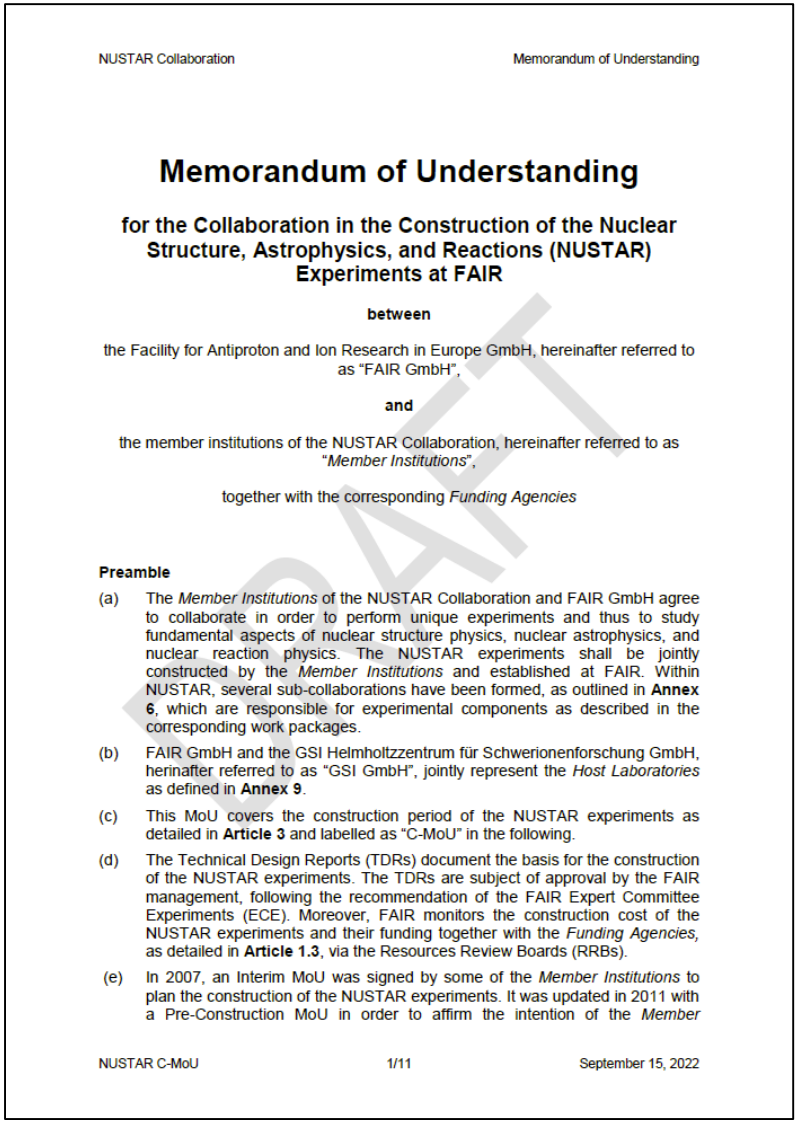
- Annex “too long”
  - Some funding agencies had concerns that the annexes are too elaborate and items for “information only” do not need to be in the Construction MoU (long legal check …)
    - **Action:** As discussed with FAIR/GSI legal advisor, all annexes (their content) will be extracted and treated as “external” document (supplement) and only the link (EDMS server) will be added to the annex.
    - For some annexes, the present version will be attached to the C-MoU, e.g., cost-matrix and Common Fund details. To be discussed with Funding agencies …
- Collaboration Agreements vs. C-MoU
  - Contributions to Phase-0 program part of C-MoU or treat separately?
    - DESPEC and R^3B collect M&O funds for Phase-0 operation
    - C-MoU deals with construction and installation of new components and new infrastructure in the new experiment caves
    - **Action:** Separate Phase-0 activities from construction/installation at FAIR
    - After construction phase, there will be a **new MoU which will cover the M&O phase of NUSTAR**

Further challenges …

- Suspension of Russian institutes
  - With the start of the war in Ukraine, all activities regarding Russian institutes were frozen.
  - In addition, with the Council decision to terminate Collaboration contracts, further changes to the cost-matrix needed to be done.
    - **Action:** Mark Russian institutes as **“suspended”** throughout the C-MoU.
    - **Action:** **Remove Russian institutes from the calculation of cost-sharing for the Construction Common Fund**. If Russian institutes will become active again, they shall be treated as new members (i.e. regarding payment into the Common Fund following the rules as given in the C-MoU).
- FAIR Science Review
  - Further re-structuring of the FAIR project
  - **New FAIR staging steps** in place
    - **Action:** Implement staging steps in the C-MoU where needed.

NUSTAR Construction MoU – follow-up …

- Intermediate version: **September 15, 2022**
  - **New "structure" of Annexes**
    - ➢ All annexes kept as external documents, which can be updated separately (with defined procedure)
  - First discussion with some funding agencies (INFN, PT-DESY for BMBF)
- Open issues:
  - Update of Common Fund item list due to FAIR staging steps
    - ➢ Discussed at ECE/ECSG meeting in May 2023
  - Clarify, if marking Russian institutes as "suspended" is sufficient
  - Minor revision needed due to "staging steps" (e.g. cost-matrix, Annex 10, …)
  - Start of operation before completion of construction – how to deal with this?
    - ➢ Suggestion of ECSG to have separate C-MoU and M&O-MoU



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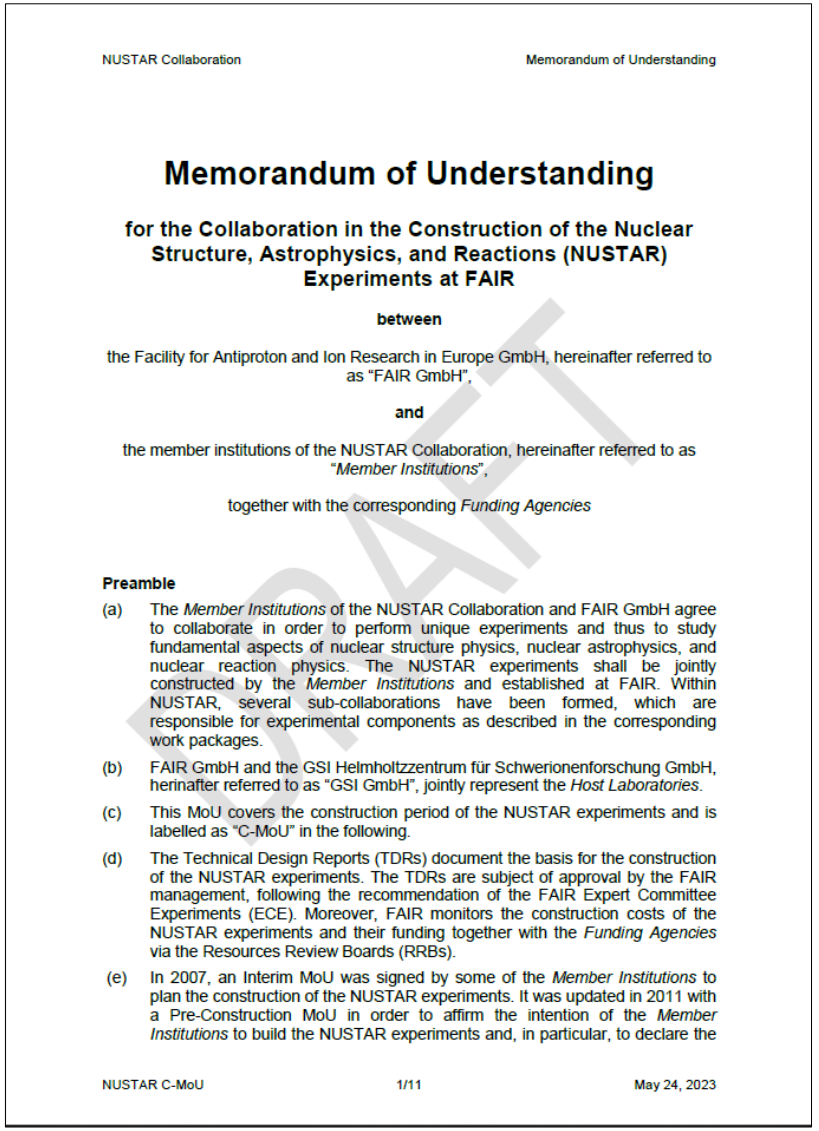
NUSTAR C-MoU 1/11 September 15, 2022

NUSTAR Construction MoU – **new version**

- **New version: May 24, 2023**
  - Additional feedback from PT-DESY taken into account
  - All supplements uploaded to EDMS server (restricted access)
    - Create lightweight account at CERN to get access
  - "Mark-up" to February 2022 version provided with RRB documents (only changes to main text/articles)
- **Feedback to new version requested**:
  - Structure and update/approval procedure of annexes ok?
  - Focus on Early and First Science clearly outlined?
  - Keep Construction MoU for full MSV and have in parallel a new Operation MoU with separate Common Fund?
    - **Feedback expected until July 17**
    - **Legal check to start afterwards**



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NUSTAR C-MoU 1/11 May 24, 2023

Structure and update procedure of annexes

Annex	Title	supplement in print version	for information only	update	source	approval type
Annex 1	List of Member Institutions of the NUSTAR Collaboration	yes	no	FAIR-RRB	NUSTAR Collaboration	information from NUSTAR Collaboration
Annex 2	List of Funding Agencies	yes	no	FAIR-RRB	FAIR-RRB	approval by FAIR-RRB
Annex 3	Organisation rules of the NUSTAR Collaboration and management structure of the NUSTAR Collaboration	no	yes	any time	NUSTAR Collaboration	approval by NUSTAR Council
Annex 4a	Responsibilities of the Member Institutions for the construction of experimental components	no	yes	FAIR-RRB	NUSTAR Collaboration	information from NUSTAR Collaboration
Annex 4b	Summary tables on construction costs and funding of the NUSTAR experiments	yes	no	FAIR-RRB	FAIR-RRB	approval by FAIR-RRB
Annex 5	Status of Technical Design Reports	no	yes	FAIR-RRB	NUSTAR Collaboration	information from NUSTAR Collaboration
Annex 6	NUSTAR sub-collaborations	no	yes	FAIR-RRB	NUSTAR Collaboration	information from NUSTAR Collaboration
Annex 7	Construction schedule	no	yes	FAIR-RRB	NUSTAR Collaboration	information from NUSTAR Collaboration
Annex 8	Procedures for the Construction Common Fund for the Common Infrastructure	yes	no	FAIR-RRB	FAIR-RRB	approval by FAIR-RRB
Annex 9	General conditions applicable to experiments performed at FAIR	no	no	any time	FAIR	approval by FAIR Committees
Annex 10	The Day-one configuration of NUSTAR and FAIR staging steps	no	yes	FAIR-RRB	NUSTAR Collaboration	information from NUSTAR Collaboration

Annex 8: CF expenditures per year (updated)

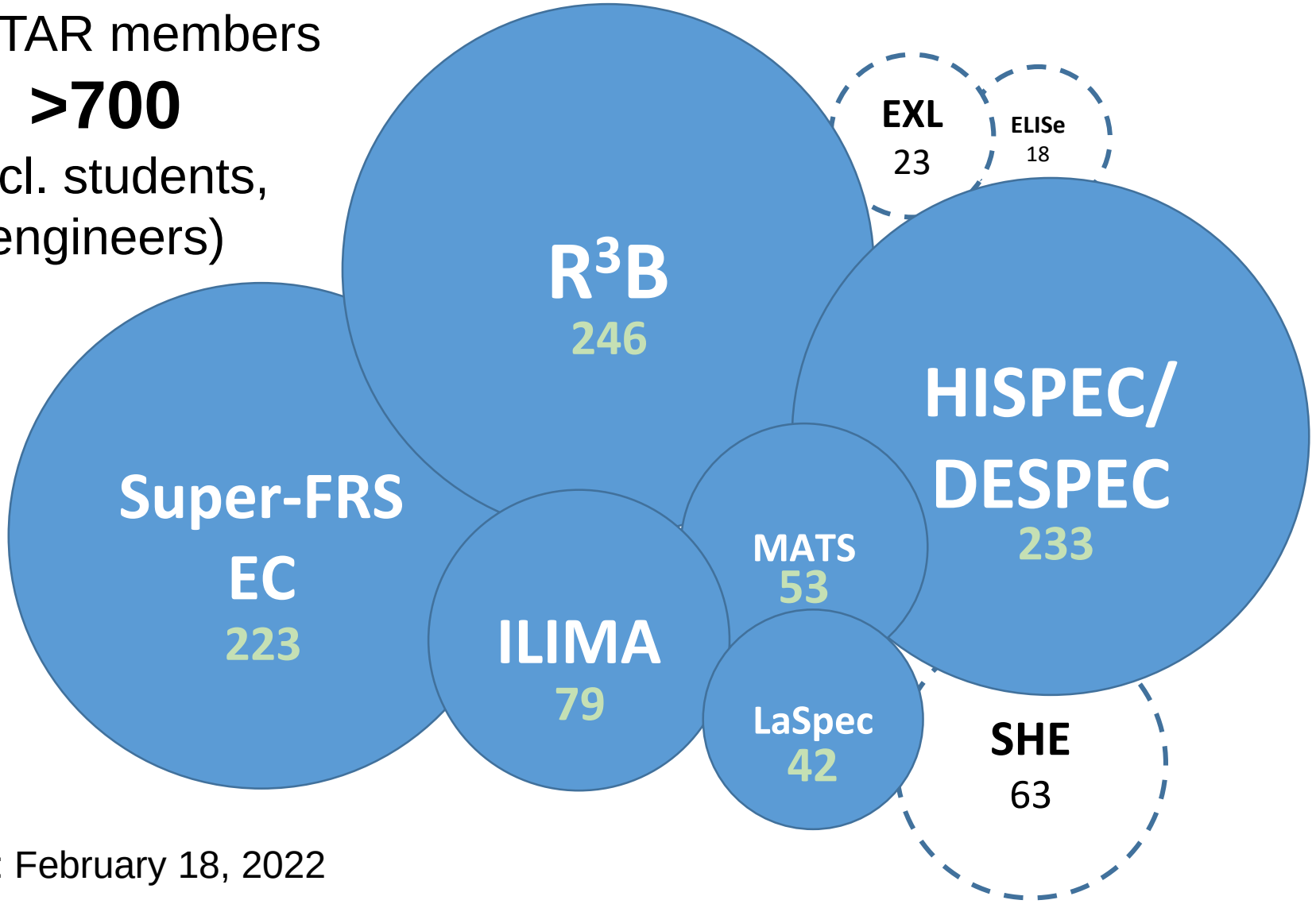
PSP-Code	Description	2023	2024	2025	2026	2027	2028	2029	2030	total
1.2.1.2.4	Detectors and slit system for FLF6				239.7					239.7
1.2.1.2.5	Beam line to MATS-LaSpec hall							294.0		294.0
1.2.1.7	Beam line to MATS RFQ							378.8		378.8
1.2.1.8	Media supplies			190.2						190.2
1.2.1.9	Safety			44.2						44.2
1.2.1.10	IT infrastructure			27.7						27.7
1.2.1.11	Mechanics and alignment			48.9						48.9
1.2.2.1.8	Scintillators at FLF2 in vacuum			49.2						49.2
1.2.2.3.6	Adaption of platforms for ES/FS operation			17.2						17.2
1.2.2.5	Safety			101.9						101.9
1.2.5.1.1.3.3	GLAD feedbox		227.6							227.6
1.2.5.1.1.3.4	GLAD warm piping		11.4							11.4
1.2.5.1.1.3.5	GLAD infrastructure	316.0								316.0
1.2.5.1.3.4	Vacuum systems (4th share)			197.8						197.8
1.2.5.1.5.1	Mechanics and alignment			192.8						192.8
1.2.6.4.4	ToF detectors - infrastructure CR								125.0	125.0
1.2.6.6.4	DAQ - common infrastructure								47.8	47.8
1.2.10.1.1.2	DAQ infrastructure (share 2)				131.3					131.3
1.2.10.1.2.1.1	Pendulum valves (share 1)				116.6					116.6
1.2.10.1.2.3	60L dewar			42.7						42.7
1.2.10.1.2.4	LN2 piping			8.6						8.6
		316.0	**239.0**	**921.2**	**487.6**	**0.0**	**0.0**	**672.8**	**172.8**	**2809.4**

NUSTAR members – before war in Ukraine

NUSTAR members

>700

(incl. students, engineers)



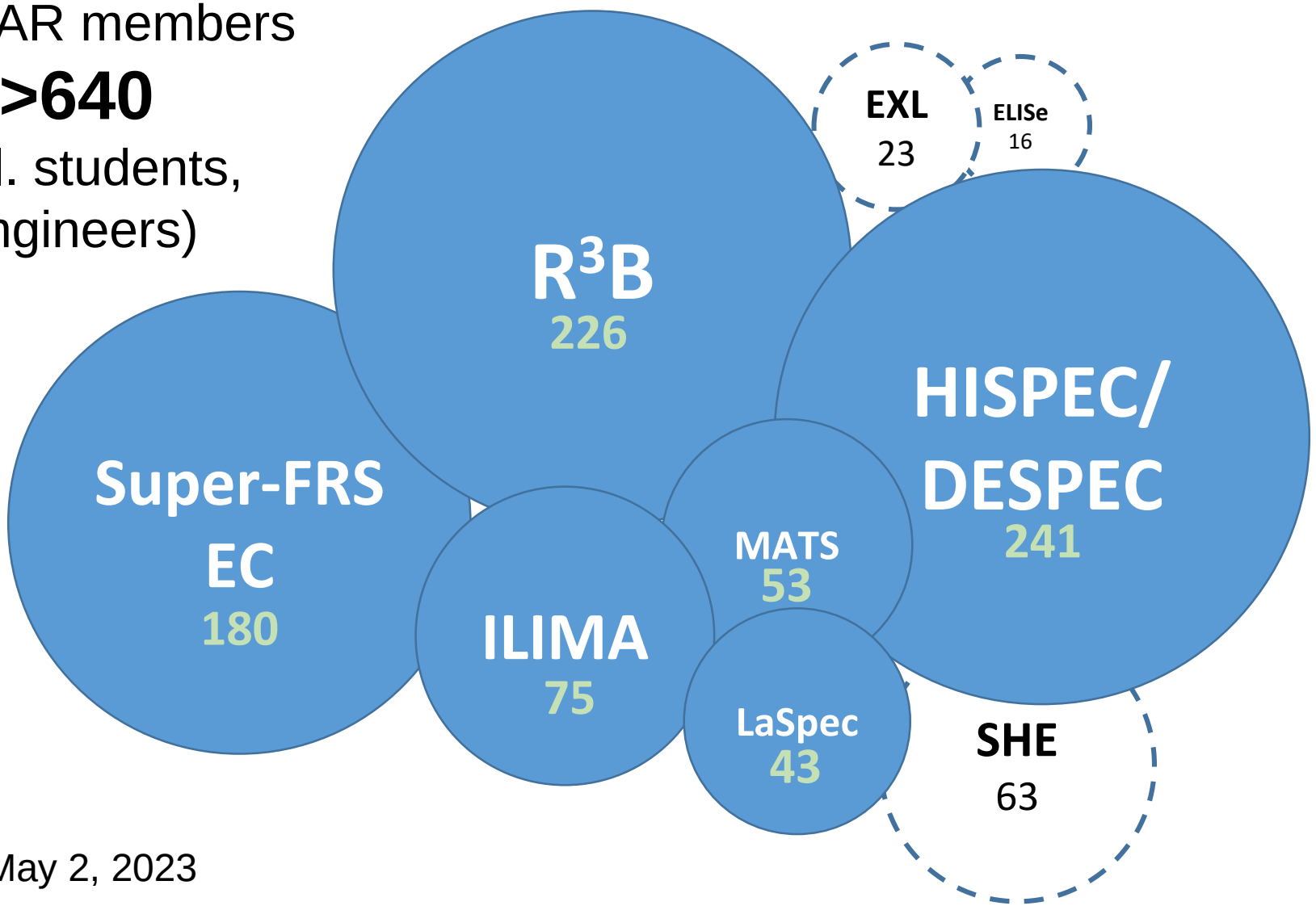
status: February 18, 2022

NUSTAR members without Russia

NUSTAR members

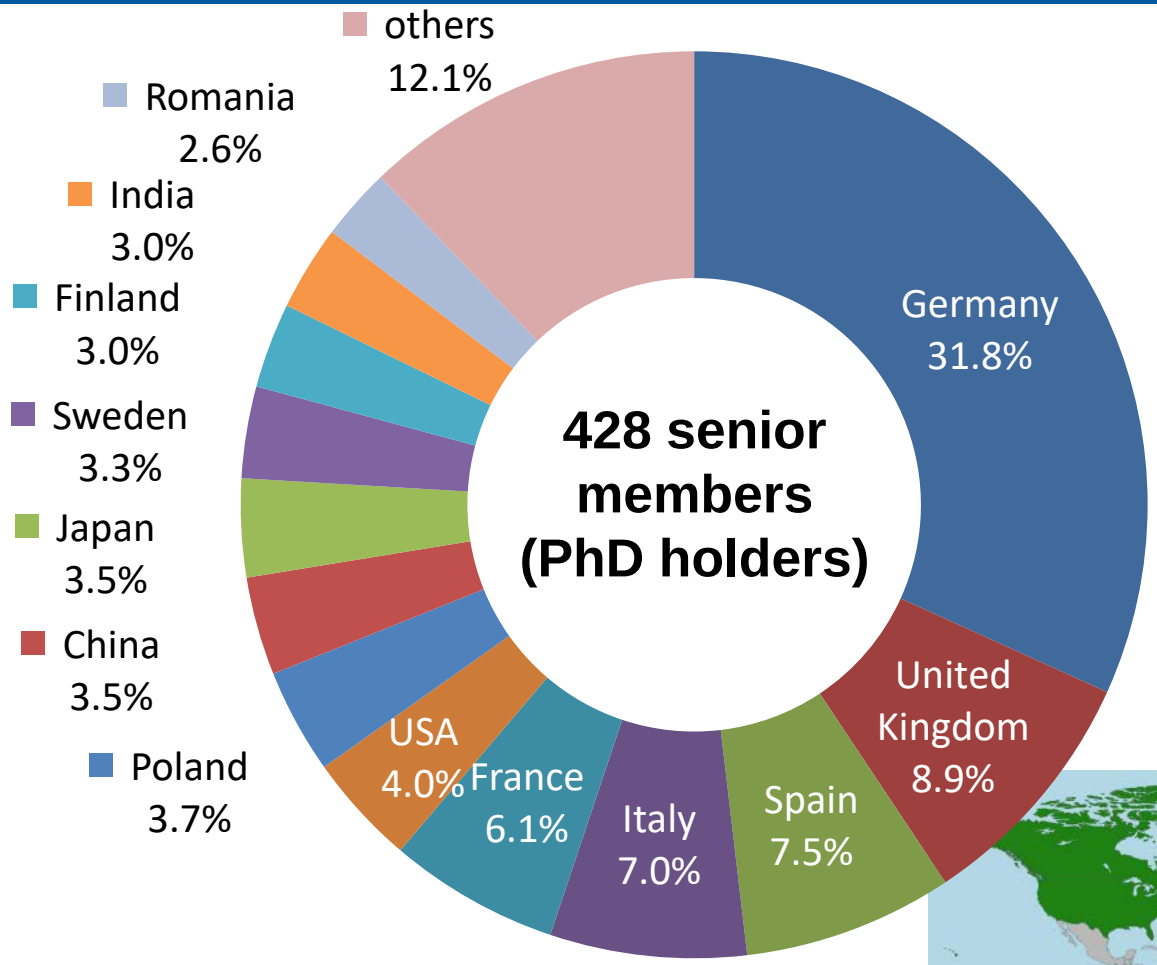
>640

(incl. students, engineers)



status: May 2, 2023

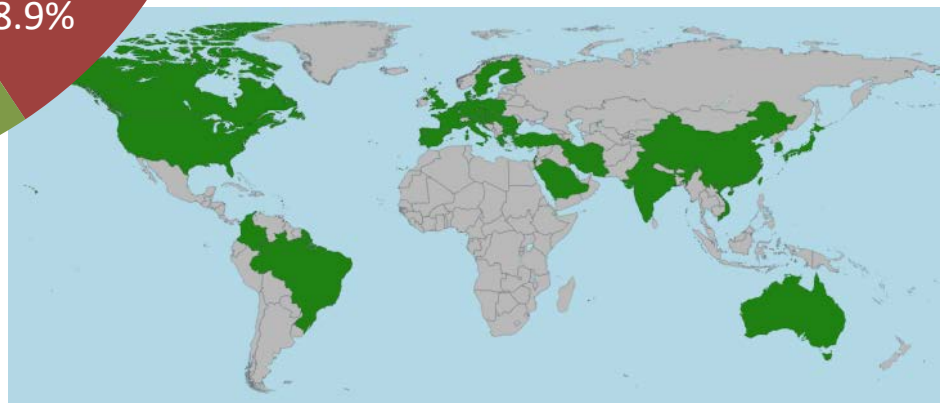
NUSTAR Collaboration senior members



For Construction Common Fund:

- **HISPEC/DESPEC**
- **MATS**
- **LaSpec**
- **R³B**
- **ILIMA**
- **Super-FRS EC**

without Russia



status: May 2, 2023

Common Fund cost-sharing – update

- Total expected cost (cash)
  - updated value **2809.4 kEUR**
- Present number of senior members
  - **428 senior members** (PhD holders)
  - Not taking into account „emeritus“ members and theoreticians with PhD
- Contribution per senior member
  - One-time payment (sum as given in the C-MoU)
  - Possibility to pay in several rates
  - Possibility to provide components instead of cash
  - **contribution per senior member: ~6.6 kEUR**
- Annex 8 cost-sharing table updated
  - Institutes may be **grouped by Funding Agency** (if requested)
  - Check number of senior members for version to be signed

Next steps

- FAIR-RRB: June 5-6
  - Present new project timeline and updated Common Fund item list
  - Present new C-MoU version and main changes
  - Request check of new structure and changes (deadline mid-July)
- Editing C-MoU (July/August)
  - Implementing change requests from Funding Agencies
- Legal check (September)
  - Request legal check (“print-out version” with selected supplements of annexes)
- Ready for signatures (November)
  - Implementing change requests from funding agencies and prepare final print version for signatures.

Conclusion

- NUSTAR Construction MoU
  - C-MoU adapted regarding new FAIR staging steps.
  - Main change: **New Annex structure** (and update procedure) to allow flexibility.
    - **Further comments expected**
  - **Provide feedback until July 17, 2023**
- NUSTAR Construction Common Fund (Annex 8)
  - Construction Common Fund item list updated
    - Minor change due to adaption for operation in High-Energy Branch as part of Early and First Science.
    - Discussed at May meeting of ECE/ECSG - **Check of list by ECSG requested**
  - Cost sharing for Common Fund updated (NUSTAR member list)
    - Russian institutes suspended
    - **Check number of senior members**

Additional material