HEARTS 1st Annual Meeting: WP8

6 February 2024

https://indico.cern.ch/event/1314502/

GSI

Funded by the European Union

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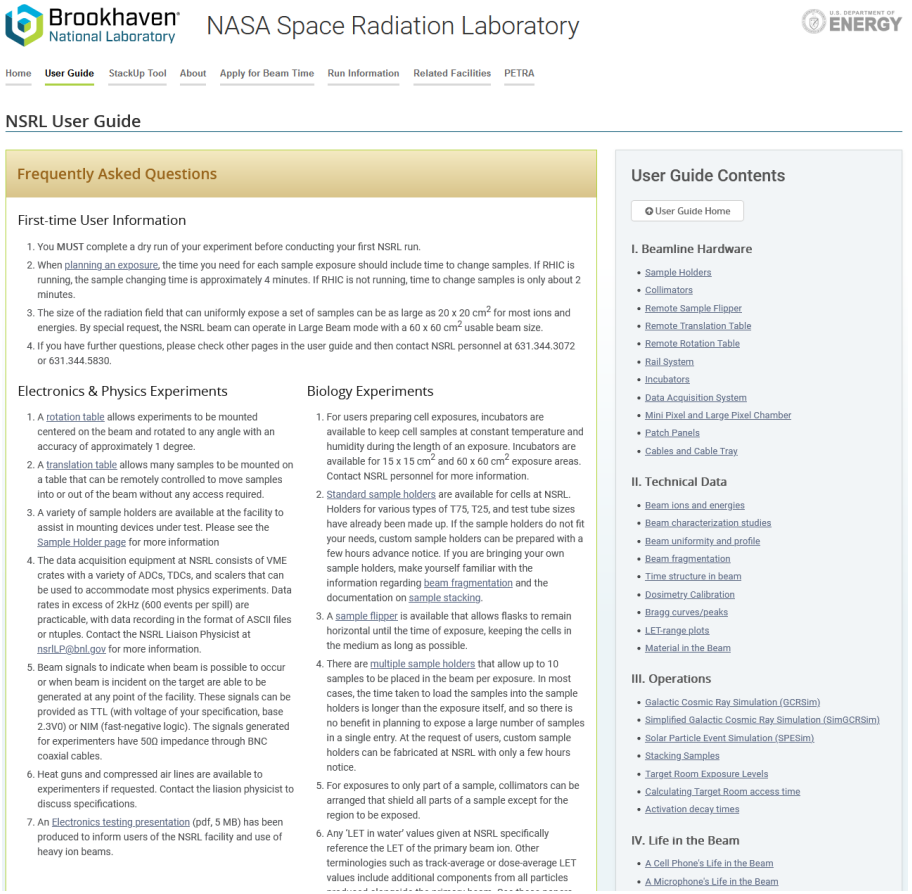
Tasks & Objectives

- **Task 8.1:** Framework for user access
  - Development of the framework and procedure to make the facility available to external users for VHE irradiation testing
  - The framework will be developed through the experience of accommodating external users for testing at GSI/SIS18 and Cave A
- **Task 8.2:** GCR simulator installation in APPA cave or CBM vault
  - Installing the GCR simulator in the CBM vault
  - Transferring the dosimetry system from Cave A and making it adequate for shielding, radiobiology and microelectronics testing
  - Will start already before the opening of the SIS100, so that the GCR/SPE simulator will be ready on FAIR-day-1
- **Task 8.3:** Test of the GCR simulator
  - On FAIR-day-1, one of the first experiments will be the testing of the GCR simulator using Fe-ions at 10 GeV/n in the CBM vault
  - Extend to a higher cutoff, around 3 GeV/n in a first test, before reaching the final goal of 10 GeV/n
  - Focus on dosimetry and on a first biological measurement to be compared to the result in Task 6.4

Status Task 8.1: Framework for user access

- Started the process to make accessing and understanding the facility easier for users
- User Guide webpage
  - Inspired by the NSRL User Guide
  - Idea: Make an easy to understand guide for the users, both for GSI and CERN
    - Highlight similarities and differences between the facilities
  - Draft available, shared with the CERN team

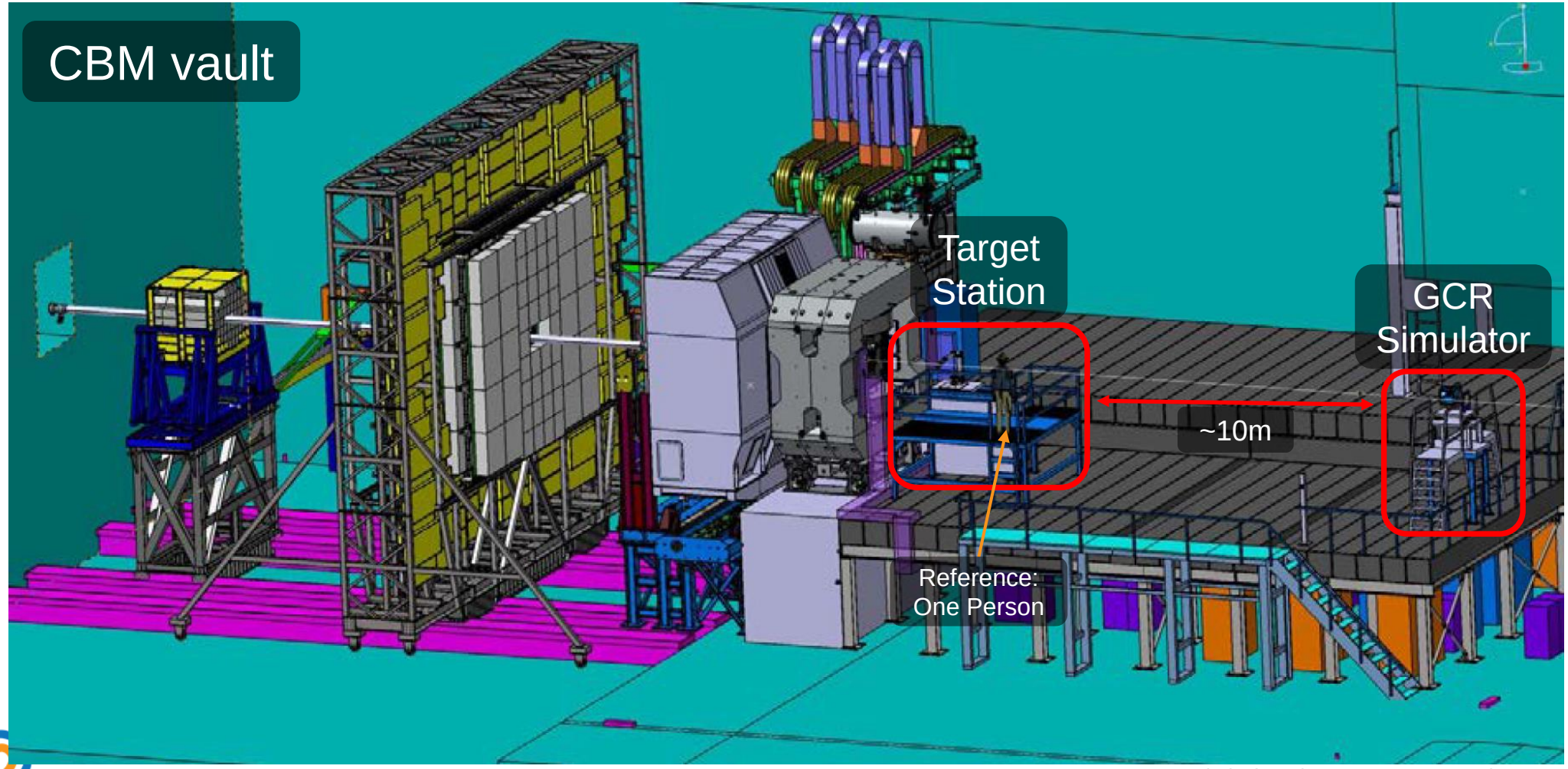


https://www.bnl.gov/nsrl/userguide/

Status Task 8.2: GCR simulator installation in the CBM vault (1/3)

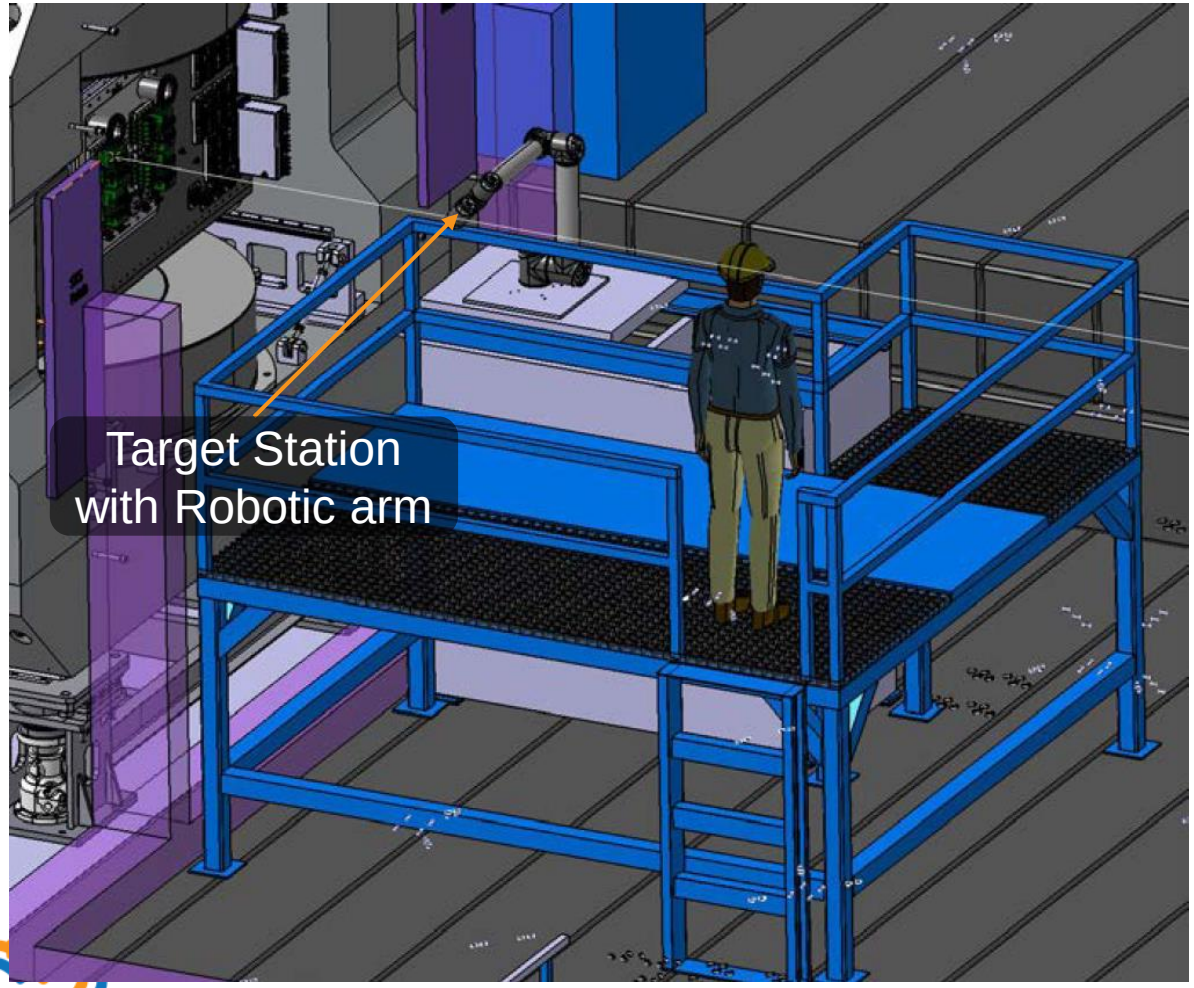
- PhD student (Luca Lunati) working on the design of the high energy GCR simulator
- Still a hybrid design for CBM, but differs from Cave A (or APPA) design
  - No beam scanning available in the CBM vault
  - Complex, rotating modulator
  - Scanning with the target, e.g. with a robotic arm
  - Has to be compatible with other equipment by other experiments in the CBM vault → Many design constraints
- Plans and designs made how to integrate GCR Experiments into the CBM vault

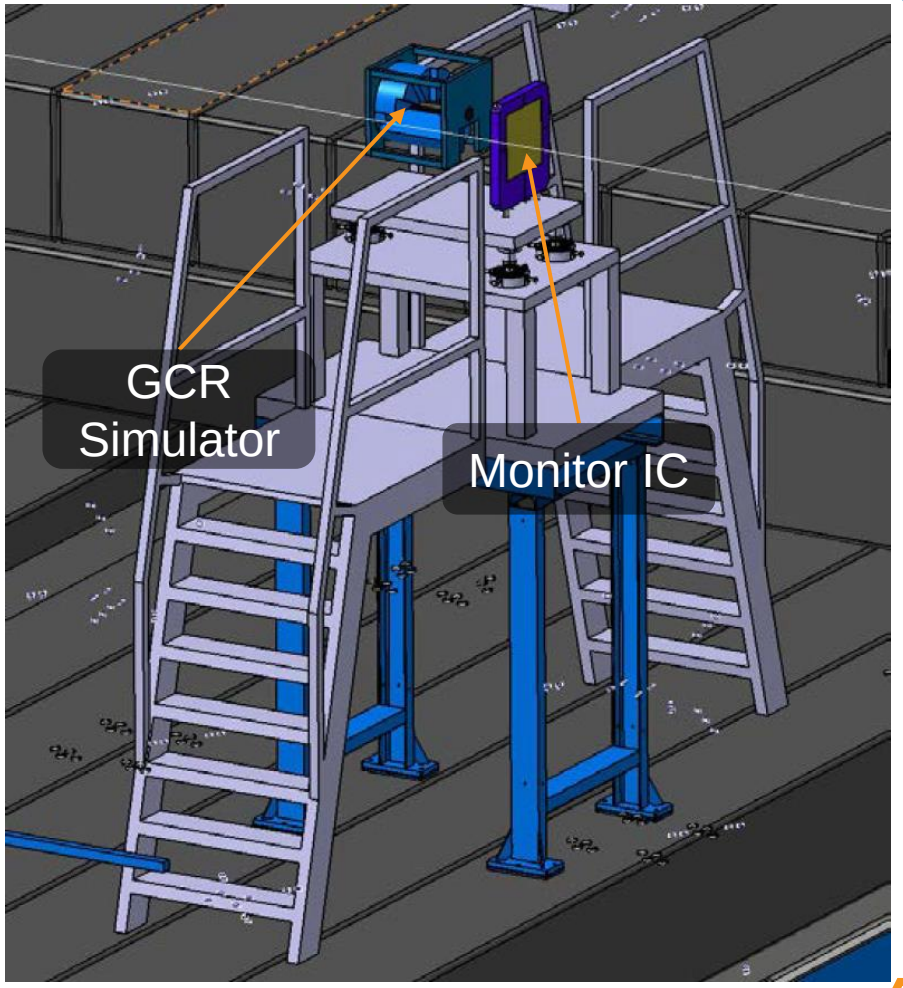
Status Task 8.2:
GCR simulator installation in the CBM vault (2/3)



Technical Design Report: BIOMAT in CBM

Status Task 8.2:
GCR simulator installation in the CBM vault (3/3)





Technical Design Report: BIOMAT in CBM

Status Task 8.3: Test of the GCR simulator

- No progress yet, as FAIR is still under construction and Task 8.2 is a requirement for this Task

Deliverables due in Y1

- No deliverables due in Y1 for WP8

Deliv. No.	Deliverable name	Due date	Status	Summary
-	-	-	-	-

The achieved deliverables are available on HEARTS website page:
https://hearts-project.eu/project/deliverables/

Milestones due in Y1

- No milestones due in Y1 for WP8

Milest. No.	Milestone name	Due date	Status	Summary
-	-	-	-	-

The achieved milestones are available on HEARTS website page:
https://hearts-project.eu/project/milestones/

Upcoming Deliverables & Milestones

Deliv. No.	Deliverable name	Due date	Status
D8.1	Established framework for user access to the GCR simulator	2026-12-31	Pending
D8.2	Installation of the GCR simulator in APPA cave or CBM vault	2026-12-31	Pending
D8.3	First measurements with GCR simulator with and without shielding in APPA Cave or CBM vault at 10 GeV/n cutoff	2026-12-31	Pending

Milest. No.	Milestone name	Due date	Status
M22	Routine access for external users at FAIR GCR simulator	2026-12-31	Pending
M23	First test at FAIR GCR simulator	2026-12-31	Pending

Plans for the (near) future

- **Task 8.1:** Framework for user access
  - Continue writing the User Guide including any new instrumentation developed during the HEARTS project (e.g. Task 4.4 Target Station)
- **Task 8.2:** GCR simulator installation in the CBM vault
  - Continue development of the new GCR Simulator design for the CBM vault
  - Perform simulations verifying new designs

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