



Contribution ID: 2398 Contribution code: THPA140

Type: **Poster Presentation**

## Vacuum design of the Super-FRS at FAIR

*Thursday, 11 May 2023 16:30 (2 hours)*

The large-acceptance Superconducting Fragment Separator (Super-FRS) at the Facility for Antiproton and Ion Research (FAIR) at GSI Darmstadt poses peculiar challenges for its vacuum systems. Although the vacuum levels ranging from  $1\text{E-}5$  to  $1\text{E-}7$  mbar for the single-pass beamline are rather undemanding in absolute values, a combination of high level of prompt and residual radiation in the target and pre-separator area, highly out-gassing and self-sealing inserts, and large volumes not usually encountered in accelerator systems are setting exceptional demands on the design of the vacuum systems. The radiation environment also has an impact on regular maintenance and emergency intervention strategies as well as on radiation hardness requirements of the standard vacuum components. We present the vacuum layout of the Super-FRS, giving an overview of the major vacuum requirements with pressure profiles from analytical as well as Molflow+ simulations of selected vacuum sectors. Additionally, the solutions implemented for remote handling of the standard and special vacuum components are discussed.

### Funding Agency

### Footnotes

### I have read and accept the Privacy Policy Statement

Yes

**Primary author:** KURICHIYANIL, Neeraj (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

**Co-authors:** BERGMANN, Alexander (GSI Helmholtzzentrum für Schwerionenforschung GmbH); KRAEMER, Andreas (GSI Helmholtzzentrum für Schwerionenforschung GmbH); MAI, Bjoern (GSI Helmholtzzentrum für Schwerionenforschung GmbH); KARAGIANNIS, Christos (GSI Helmholtzzentrum für Schwerionenforschung GmbH); WEICK, Helmut (GSI Helmholtzzentrum für Schwerionenforschung GmbH); KURDAL, Jörg (GSI Helmholtzzentrum für Schwerionenforschung GmbH); WINKLER, Martin (GSI Helmholtzzentrum für Schwerionenforschung GmbH); PURUSHOTAMAN, Sivaji (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

**Presenter:** KURICHIYANIL, Neeraj (GSI Helmholtzzentrum für Schwerionenforschung GmbH)

**Session Classification:** Thursday Poster Session

**Track Classification:** MC7: Accelerator Technology and Sustainability: MC7.T14: Vacuum Technology