

Facility for Antiproton and Ion Research in Europe (FAIR)

IGSTC Industrial Fellowships PIEF and PDIF



Industrial Research Projects

FAIR GmbH together with research groups at GSI conducts basic and applied research in physics and related disciplines, focusing on:

- **Nuclear and atomic physics combined with applications**
- **Plasma and applied physics**
- **Materials research and nanomaterials & technology**
- **Biophysics and tumor therapy**
- **Accelerator technology and its development**
- **Magnet and superconducting technology**
- **Novel detector development**
- **Radiation medicine**
- **High performance computing and its application**



The facility provides unique instruments and experimentation stations for researchers, including the UNILAC linear accelerator and the SIS heavy-ion synchrotron. In the previous calls, FAIR GmbH received an industrial fellowship for both **PIEF** and **PDIF**.

FAIR (and GSI) actively engage in technology transfer and industrial collaborations, offering a broad portfolio of intellectual property, expertise, and technical problem-solving skills. FAIR supports joint R&D projects, IP licensing, and the establishment of spin-off companies. FAIR (& GSI) participated in the Start-up & Innovation Day, presenting technologies and cooperation opportunities in energy efficiency, material research, electronics, and IT/software. FAIR (and GSI) also offers start-ups access to the "Digital Open Lab" within the Green IT Cube, an energy-efficient data center designed for developing and testing high-performance computing solutions. The institution collaborates with approximately 400 institutes from more than 50 countries, providing a vibrant, international research environment.

The selection of projects is based on the applicant's profile as well as the project's viability, desirability of the mentor, and Viability in the context of doctorate experience under the PIEF scheme and postdoctoral experience under the PDIF scheme.

Prospective candidates are urged to explore the following links for projects accessible in the technical and scientific fields at FAIR and submit their data once to the Program Manager (see below) if they want to obtain a Letter of Consent while applying to IGSTC Industrial fellowships.



The FAIR (Facility for Antiproton and Ion Research) accelerator facility significantly enhances research opportunities in several ways:

- Unique Particle Beams: FAIR (at GSI currently) generates particle beams of unparalleled intensity and quality, including ions of all natural elements in the periodic table and antiprotons
- Extreme Conditions Simulation: Researchers can create matter under extreme conditions that typically exist only in space, such as those found in giant planets, stars, and stellar explosions
- Diverse Research Areas: The facility supports a broad spectrum of experimental approaches across multiple disciplines, including nuclear and atomic physics, plasma physics, materials research, biophysics, and radiation medicine
- Advanced Technology: FAIR incorporates cutting-edge technologies and innovative measuring methods, pushing the boundaries of scientific exploration
- Particle Storage and Reuse: The complex system of storage rings allows researchers to capture and reuse rare particles, effectively increasing experimental intensity without additional acceleration
- International Collaboration: FAIR fosters global scientific cooperation, attracting over 1400 researchers from around the world



- **Multistage Experimentation:** The facility's design, including the SIS100 ring accelerator and various storage rings, enables multistage experiments and the production of secondary particles for further research
- **Antiproton Research:** FAIR's ability to produce and study antiprotons opens up unique opportunities in antimatter research
- **Superconducting Technology:** The use of superconducting magnets cooled to -269°C allows for unprecedented particle acceleration capabilities

These enhancements make FAIR a world-leading facility for fundamental physics research, offering scientists unprecedented tools to explore the structure of matter and the evolution of the universe.

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