JUSTUS-LIEBIG-UNIVERSITÄT GIESSEN

Founded in 1607, Justus Liebig University Giessen (JLU) is a research university rich in tradition. Inspired by curiosity about the unknown, we enable around 26,500 students and 5,700 employees to advance science for society. Join us in breaking new ground and writing success stories - your own and those of our university.

Support us from 01.09.2024 in part-time (65 %) as a

Doctoral student (m/f/d)
in the field of experimental nuclear physics

As part of the externally funded project "*NUSTAR.GI-4 – Mass spectrometry developments for NUSTAR at FAIR*" **two PhD positions** are to be filled on a fixed-term basis in accordance with § 2 WissZeitVG and § 72 HessHG with the opportunity for own academic qualification at the Chair of Experimental Nuclear Physics, II. Institute of Physics, Faculty of Mathematics and Informatics, Physics, Geography. The salary is in accordance with the collective labour agreement of the State of Hessen (E 13 TV-H). As long as the maximum permissible duration of a fixed-term contract is not exceeded, you will be employed for a period of 3 years.

The research group studies the structure and properties of exotic (short-lived) nuclei far off stability. These nuclei are synthesized in Nature in nuclear reactions during the burning phases of stars or in thermo-nuclear runaways during star explosions and neutron star mergers. These macroscopic environments are governed by the microscopic properties of short-lived nuclei. Therefore, the latter are subject of intense research. In the laboratory, exotic nuclei are produced and studied at accelerator facilities. A leading laboratory in this field is the GSI Helmholtz Centre for Heavy Ion Research in Darmstadt, Germany and in the future the Facility for Antiproton and Ion Research (FAIR), currently under construction. At GSI and FAIR, such nuclei are produced at the fragment separators FRS and Super-FRS, respectively, and are investigated with sophisticated detector systems. In particular, at the (Super-)FRS Ion Catcher, they are thermalized in a cryogenic gas-filled stopping cell and their mass is measured using a multiple-reflection time-of-flight mass spectrometer (see: http://www-windows.gsi.de/frs-ion-catcher). In the framework of this research project high-accuracy mass measurements of exotic nuclei are per-formed at the FRS Ion Catcher, and the cryogenic stopping cell for the Super-FRS is constructed and commissioned.

The two PhD positions cover the following tasks

- Preparation, execution and analysis of mass measurements of exotic nuclei with the FRS Ion Catcher at GSI
- Participation in and contributions to the construction and commissioning of the cryogenic stopping cell of the Super-FRS
- Implementation of technical upgrades and experimental work at the stopping cell and the multiple-reflection time-of-flight mass spectrometer
- Scientific simulations
- Further development of data analysis methods

Your qualifications and competences

- Completed Master's or equivalent university degree in physics (preferred) or related fields
- Experience in experimental nuclear physics
- Good analytical and technical skills
- Ability to work systematically, independently as well as in a team
- Computer literacy
- Good communication skills in English (oral and written)

- Experience in one or several of the following fields are desirable: mass spectrometry of exotic nuclei, ion trapping, detector technology, electronics, CAD, vacuum technology, cryogenics, data analysis procedures, scientific simulations, programming languages (e.g., C++)

Our offer to you

- Research in an international and interdisciplinary environment, both at JLU Gießen and at GSI Darmstadt, a world-wide unique accelerator facility
- A varied job with flexible working hours
- Possibility of working towards a PhD
- Free use of local public transport (LandesTicket Hessen)
- More than 100 training seminars, workshops and e-learning opportunities per year for personal development, as well as a wide range of health and sports activities
- Remuneration according to TV-H, company pension scheme, child allowance and special payments
- Good compatibility of family and career (certificate "audit familiengerechte hochschule")

If you have any further questions, please do not hesitate to contact Prof. Dr. Christoph Scheidenberger by E-Mail (IONAS@physik.uni-giessen.de).

JLU aims to employ more women in academic research. We therefore particularly encourage female candidates to apply. JLU is regarded as a family-friendly university. Applicants with children are very welcome. Applications from disabled people of equal aptitude will be given preference.

You want to break new ground with us?
Apply via our **online form** (incl. cover letter, curriculum vitae, Diploma or MSc certificate/transcript, name of two references) by **August 20th, 2024**, indicating reference number 497/07. We look forward to receiving your application.