OPENING SOON:

Post-doctoral researcher in nuclear spectroscopy at TU Darmstadt and GSI Darmstadt

The Department of Physics of TU Darmstadt intends to screen the community for a post-doctoral researcher position in nuclear physics research within the DESPEC (Decay SPECtroscopy) collaboration. For reasons of the funding modalities we are inviting expressions of interest for this position. The DESPEC experiment forms part of the NUSTAR (NUclear Structure, Astrophysics and Reactions) collaboration, which comprises one of the scientific pillars of the future FAIR facility currently under construction in Darmstadt, Germany. The DESPEC setup consists of a flexible suite of state-of-the-art detector technologies, where investigations of nuclear structure and astrophysics are enabled through the measurement of decay radiation emitted from exotic ions at rest. At present, experiments are being carried out as part of FAIR Phase-0 at the existing GSI facility at the final focal plane of the FRagment Separator (FRS), where exotic isotopes are identified on an event-by-event basis and implanted into the core of the DESPEC array.

The successful candidate will be mostly located at the Nuclear Spectroscopy Department at GSI and will play a leading role in the setup and coordination with external groups of the implantation setup for DESPEC. The setup will comprise of the AIDA detector imbedded into two large area plastic scintillators (b-plast) in front and behind it. Both, the DSSSD-AIDA detector as well as bplast, serve for ion and beta detection, of which the first has excellent position resolution and the second time resolution. Both detectors combined with the DESPEC gamma-ray array will allow for identifications of implanted ions and their decay either isomeric, beta- or alpha decay.
The execution of a DESPEC experiment as a local responsible in the context of FAIR Phase-0 with the goal of investigating N=Z nuclei below ^{100}Sn, as well as in the subsequent in-depth data analysis, student guidance and supervision, and dissemination of scientific results are main scopes of the position. The new information obtained will provide an important insight on the evolution of shell structure and the on-set of collectivity in the ^{100}Sn region and on the role of the proton-neutron interaction in this process.

Tasks:
−setup and testing of state-of-the-art detector hardware and data acquisition (DAQ) systems, in particular the implantation setup
−conducting DESPEC experiments in FAIR Phase-0
−development of appropriate software for processing and analysis of experimental data
−dissemination of scientific results at international conferences/workshops
−publication of results in peer-reviewed journals
−support and contribute to the activities of the group

Requirements:
−PhD degree in nuclear physics
−keen interest in nuclear spectroscopy and experimental nuclear physics
−knowledge of and experience in radiation detectors and DAQ systems for nuclear physics applications
−experience with programming in C++ and python
−excellent communication skills in both written and spoken English
−knowledge and/or interest in machine-learning methods desirable

The position is expected to be available from 01.08.2023 on a full time basis and is limited to two years (with extension possibility).

The expressions of interest including a curriculum vitae and a proof that you have a PhD degree in physics shall be sent by email (in one pdf-file) to Professor Dr. Norbert Pietralla (pietralla@ikp.tu-

darmstadt.de) and to Dr. Magda Gorska (gorska@gsi.de) before 31.03.23. Based on the incoming expressions of interest, an ad-personam appointment procedure of the most competitive, suitable candidate will be started.