

Nuclear reactions and building of needed infrastructure.

Group: Nuclear astrophysics.

Job Description

The position is in experimental fields of low energy nuclear physics, nuclear astrophysics. The tasks are connected to accelerators in Rez (U120M cyclotron), Prague (Van de Graaff) and GANIL/SPIRAL2. The research program will include work on preparations and running experiments with astrophysical context, software/hardware development, data analyses. Applicants should have experience in nuclear physics and nuclear reactions, nuclear electronics and detectors, DAQ and programming languages (C++). Experience with root libraries is welcome for data analysis. Experience with nuclear reaction codes is welcome for the interpretation.

Contact: Jaromir Mrazek
Nuclear Physics Institute of ASCR
25068 Rez
Phone: +420-26617-3506
Email: mrazek(at)ujf.cas.cz

Group: Neutron Reaction Studies

Job Description:

Nuclear Reactions Department of the Nuclear Physics Institute (NRD NPI) is doing research and development work in the field of fast neutron physics for basic and applied research of the fusion-relevant neutron database.

The precise knowledge of the physical processes in neutron interaction with matter is an essential basis for energy production by means of nuclear fusion technologies. For this purpose, we are taking part in the experimental validation of data libraries and computational procedures for fusion-relevant neutronics. The research program is cooperated with partners from Consortium for Nuclear Data (ENEA Frascati, KIT Karlsruhe, NPI Řež, AGH Krakow, JSI Ljubljana, CCFE Culham, ...), supported by European Joint Undertaking for ITER and the Development of Fusion Energy (Fusion for Energy – F4E) and other European institutes involved in large-scale infrastructures (SPIRAL2/NFS at GANIL) as well. The neutron radiation hardness tests are carried out as well in the cooperation with Max-Planck-Institute Munich. NRD offers open access for external users to the facilities in the Laboratory of Cyclotron and Fast Neutron Generators in the infrastructure NPI CANAM (Center of Accelerators and Nuclear Analytical Methods).

The fast neutron sources were recently upgraded with the pneumatic post system for irradiated samples, which allowed us to measure the isotopes with shorter decay times (ca. 10 seconds). Another upgrade, a neutron collimator, is currently going on and will allow the detection of the produced isotopes with the ms decay times.

For the participation on the newly available experiments, we are looking for an experimental physicist with a doctor's degree (post-doc)

Tasks:

The candidate's task will be to further develop the activation cross-section measurement methods based on fast neutron sources. The candidate will work in a committed team of experts within framework of international collaboration and will be able to use NRD infrastructure as well, e.g. white- and quasi-monoenergetic neutron fields from cyclotron-based generators, HPGe gamma spectrometer, numerical procedures, electronic- and mechanical hardware.

Requirements:

We assume completed university studies of nuclear physics with a PhD degree in experimental physics up to three years from PhD, good skills in English. Knowledge and experience in the field of fast neutron physics (neutron activation), nuclear physics metrology (HPGe, data acquisition) and codes for radiation transport, nuclear models, cross-section extraction (MCNPX, FLUKA, Geant4, TALYS, SAND, STAYSL...) are of great advantage.

Contact: Mitja Majerle,
Nuclear Physics Institute of ASCR
25068 Rez
Phone: +420 266 17 2123
Email: majerle@ujf.cas.cz