



Postdoctoral Programme in Research and Modeling of the Mass-transfer Process Induced by Ionizing Radiation in Materials for Radiation Technologies

12-month contract, renewable for another max. 24 months

Your mission

The main objective is a research and modeling of the mass-transfer process induced by ionizing radiation (neutrons, protons, etc.) in materials (metals, ceramics, high entropy systems) for radiation technologies and nuclear power engineering using Monte-Carlo method. For research and modeling the methodological complex of the EG-5 Accelerator's group and the SERPENT 2.0, Monte Carlo simulation (MCNP, Fluka), COMSOL codes can be used. The collaboration with the National Research Nuclear University MEPhI (Russia) and Al-Azhar University (Egypt) will be prerequisite. Participation in scientific and technical projects implemented in the EG-5 Accelerator's group will be required. Certain relevant problems in the field of accelerator physics, nuclear reactor physics radiation protection and radiation medicine must be solved.

Your tasks

You will work with our EG-5 Accelerator group. Your research program will focus on:

- Development of methods for mathematical modeling (Monte Carlo), mass-flow processes in materials under the influence of ionizing radiation.
- Calculation and practical implementation of neutron moderators for usage in radiation medicine (BNCT, SERPENT 2.0).
- Calculations of radiation protection from neutron radiation in hall No. 1 the EG-5 Accelerator.
- Calculation of neutron fields in living tissue in Boron Neutron Capture Therapy of Planar Objects.
- Implementation of a user program on the EG-5 accelerator.
- Organization of cooperation with Egyptian institutions.

Constraints and risks

The candidate is expected to undertake international business trips for periods varying from 1 to 4 weeks. Shift work and work on weekends may be necessary, remote work is allowed. The work will be carried out at the accelerator facilities, whereby the necessary authorizations will be issued following the annual medical examination arranged by the employer.

Depending on your citizenship, you may need to obtain a visa and this process can last several months. JINR offers all the necessary support for obtaining the entry permit for the Russian Federation.

Your profile

- Highly motivated candidate with a PhD (obtained less than 5 years ago) in nuclear physics, radiation materials science.
- Age under 40, have not had more than 3 temporary positions.
- Strong background in experimental physics or radiation materials science is a prerequisite.
- Practical experience in nuclear physics and radiation materials science experiments, modeling of the mass-transfer process induced by ionizing radiation in materials would be advantageous.
- As an international intergovernmental research organization, we are particularly keen to ensure that we also attract applicants from outside of Russia. You must have good knowledge of English and be willing to learn Russian (a language course will be provided by JINR).

What we offer

High quality of life

Called the "Island of Stability", the city of Dubna is ideally located on the bank of Europe's largest waterway — the Volga River (only 2.5 hours from Moscow by train or bus and 1.5 hours by car from Sheremetyevo International Airport). It is important for us that our employees quickly and easily adapt to the new living conditions and have a healthy work-life balance. Therefore, we offer accommodation in comfortable guest-house rooms (for singles), or fully furnished flats owned by JINR, and annual paid leave.

Prospects

We guarantee you a **12-months postdoctoral contract, renewable for another max. 24 months (36 month in total)**, in a multicultural scientific environment.

Remuneration

2300 USD per month, paid in Russian rubles at the planned exchange rate (forecasted year-average), which is adopted with the JINR budget for the current year. In 2023, the exchange rate is 69.2 Russian rubles per 1 USD.

Income tax of 13% is applied. The employer shall pay no pension insurance.

Benefits

We offer considerable social benefits: settling-in allowance, air fare (except for family members), free local health insurance for you and your family members, relocation assistance (under certain conditions), free public school or kindergarten attendance for children. We also offer free Russian courses and subsidies for the use of JINR sports infrastructure (Olympic swimming pool, stadium, gym, etc.), as well as access to a variety of cultural activities.

Apply now



Joint Institute for Nuclear Research (JINR) — operates a large park of accelerators and a reactor based intense neutron source in Dubna (Russia). From the very foundation of the Institute, the implementation of the JINR motto “Science brings nations together” has grown into a special scientific atmosphere of mutual respect and support. Let's work together to better understand the fundamental properties of matter that might enable a quantum leap in the living standards of our society.

jinr.int | [telegram](#) | [twitter](#)