



Postdoctoral Programme in Novel Cherenkov Detector Development

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

Your mission

The main objective of this position is to develop and test working model of the Detector of internally reflected Cherenkov light (DIRC) and perform research on the design and performance of materials for this detector. Cherenkov light is a unique mechanism which can provide precise particle identification for particles with high transverse momenta in the range where other detectors fail to provide proper PID. Main task for the candidate would be R&D for radiator materials for the means of better discrimination between Cherenkov and scintillation light, irradiation hardness and its influence on optical properties of the material. The work would be done as a preparation for next generation of high energy physics experiments with electron-ion collisions. It would be done in collaboration with Brookhaven National Laboratory, universities and scientific institutes from JINR member-states and collaborative countries. It is aimed on production of the EIC detector subsystem.

Your tasks

You will work with our group in the Laboratory for high energy physics. Your research programme will focus on:

- Performing radiation hardness tests for potential materials for the Cherenkov detector radiator. Investigating Cherenkov light emission parameters and optical performance of the material before and after exposure to different types of radiation and consumed dose.
- Performing Monte Carlo modeling of materials suitable for Cherenkov radiator production and calculating MC performance of investigated materials.
- Integrating test samples of the radiator into a test bench with read-out electronics for signal registration.

- Assistance to the scientists in our group in establishing new scientific ties with other experimental groups with a similar scientific scope (Electron Ion Collider groups) in order to further develop our scientific network.

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 possible. The work at the accelerator facilities may be required, 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 physics, nuclear chemistry, or in a similar field.
- Age under 40, have not had more than 3 temporary positions.
- Strong background in experimental physics or laser optics is a prerequisite.
- Practical experience in particle detectors manufacturing and laser optics 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 2024, the exchange rate is 90.1 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.

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