Joint Institute for Nuclear Research
International Intergovernmental Organization

SCIENCE BRINGS NATIONS TOGETHER

Postdoctoral Programme in Development of the Analytical Framework for the JUNO Experiment

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

Your mission

The main objective of this position is the participation in development of the analytic analysis framework for the JUNO reactor neutrino experiment, that will include the data-driven energy reconstruction, energy resolution and the shape of the detector response. The main goal of the experiment is the determination of the neutrino mass hierarchy, with the vast research programme beyond. The current approach for the energy reconstruction is based on the maximum likelihood method and uses the massive Monte Carlo simulation of the detector. The new analysis framework will be based on the real data. It is expected that the framework will be tested with the data and will be finally tuned on the real data after the start of the experiment.

Your tasks

You will work with our group in Dubna. Your research programme will focus on:

- Development of the analytical framework for energy reconstruction, energy resolution and the shape of the detector response for the JUNO data analysis.
- Intensively using the Monte Carlo and providing feedback for the Monte Carlo group;
- Analysis of the real data for one or more of the physics objectives of the JUNO experiment.

Constraints and risks

The candidate is expected to undertake international business trips for periods varying from 1 to 4 weeks. Shift work may be necessary.

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.

JINR DOSCIENCE@DUBNA

Your profile

- Highly motivated candidate with a PhD (obtained less than 5 years ago) in experimental particle physics.
- Age under 40, have not had more than 3 temporary positions.
- Strong background in experimental particle physics and C++ programming is a prerequisite.
- Practical experience in using GEANT 4 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

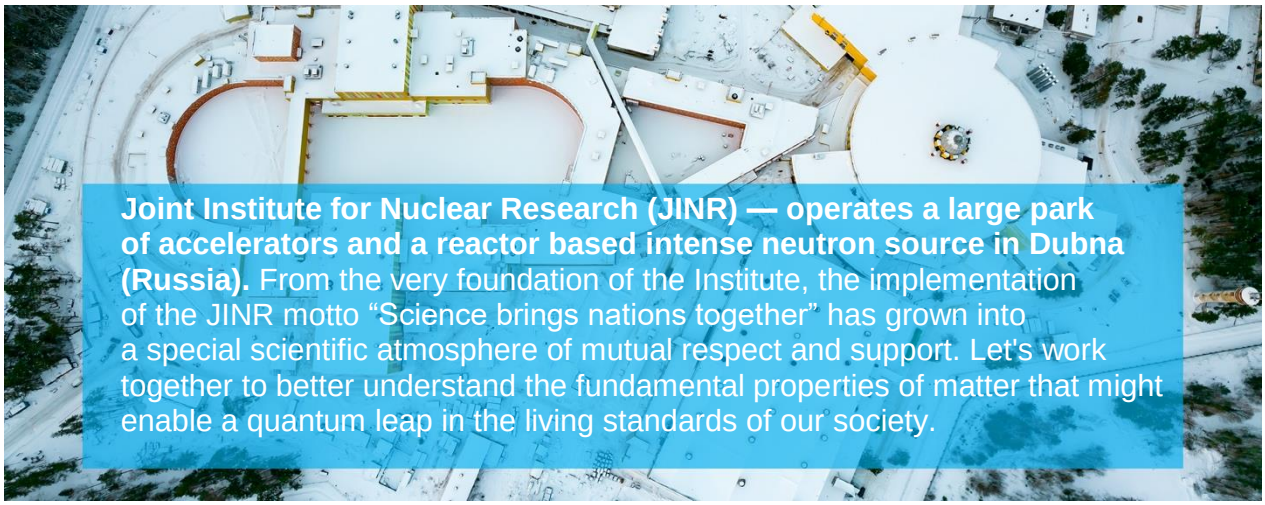
2300 USD per month, paid in Russian rubles at the planned exchange rate (forecasted year-average), which is adopted with the JINR budget for the current year. In 2024, the exchange rate is 90.1 Russian rubles per 1 USD.
Income tax of 13% is applied. The employer shall pay no pension insurance.

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

JINR DOSCIENCE@DUBNA



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**

JINR DOSCIENCE@DUBNA