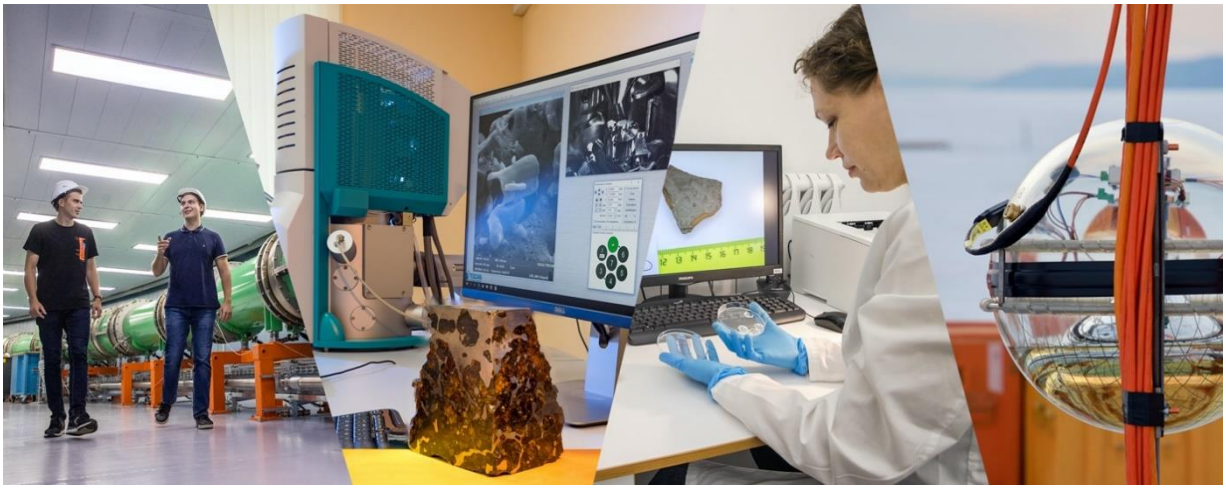
Joint Institute for Nuclear Research
International Intergovernmental Organization

SCIENCE BRINGS NATIONS TOGETHER



Postdoctoral Programme in Neutrino Oscillation Parameters Measurement with the JUNO Experiment

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

Your mission

The main objective of this position is to conduct research to determine the Neutrino Mass Ordering (NMO) and to precisely measure the parameters of neutrino oscillations. The work will be carried out as part of the JUNO international experiment in close cooperation with Chinese and European colleagues. This position implies both experimental data processing and additional activities to refine the response functions of the JUNO and TAO detectors.

Your tasks

You will work as part of the JINR-MSU joint group in the JUNO experiment. Your research programme will focus on:

- Selection of Inverse Beta Decay (IBD) events and related background events (in particular, potentially including background from accidental coincidences, fast neutrons and ^{9}Li/^{8}He).
- Selection of IBD events based on TAO detector data and obtaining a reference spectrum of reactor antineutrinos for its use in JUNO NMO data analysis and measurements of neutrino oscillation parameters.
- Investigation of the features of the reactor antineutrino spectrum obtained using the TAO detector.
- If possible or necessary, participation in fitting the data with a model to determine the NMO and precisely measurement the parameters of neutrino oscillations.
- Participation in calibrations of the JUNO and TAO detectors and analysis of the relevant data.

Constraints and risks

The candidate is expected to undertake international business trips for periods varying from 1 to 4 weeks. Shift/technical work and work on weekends may be necessary. Remote work is allowed and possible, but not all the time. Some work may be carried out in underground laboratories or

at nuclear power plants. To participate, you will need to have the necessary authorizations. The employer will arrange the respective annual medical examination and other safety courses for obtaining permits to work in harmful and dangerous conditions.

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, astrophysics, or in a similar field.
- Age under 40, have not had more than 3 temporary positions.
- Strong background in neutrino or elementary particle physics or nuclear physics is a prerequisite.
- Knowledge of Chinese is welcome, although it is not a limiting factor.
- Ability to program in C++ and Python. Experience working in the ROOT package and typing in the TeX system. Willingness to use the Git version control system and document research results and useful technical information in the Wiki of the JUNO experiment.
- Experience working with nuclear electronics is welcome.
- As an international intergovernmental research organization, we are particularly keen to ensure that we also attract applicants from outside Russia. You must have a good knowledge of English and be willing to learn Russian (a language course will be paid for 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, adopted in the JINR budget for the current year, which is fixed on the date of conclusion of the contract and valid throughout its entire term). In 2025, the exchange rate is 96.5 Russian rubles per 1 USD, in 2026 the planned exchange rate will be 92.2 Russian rubles per 1 USD).*

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

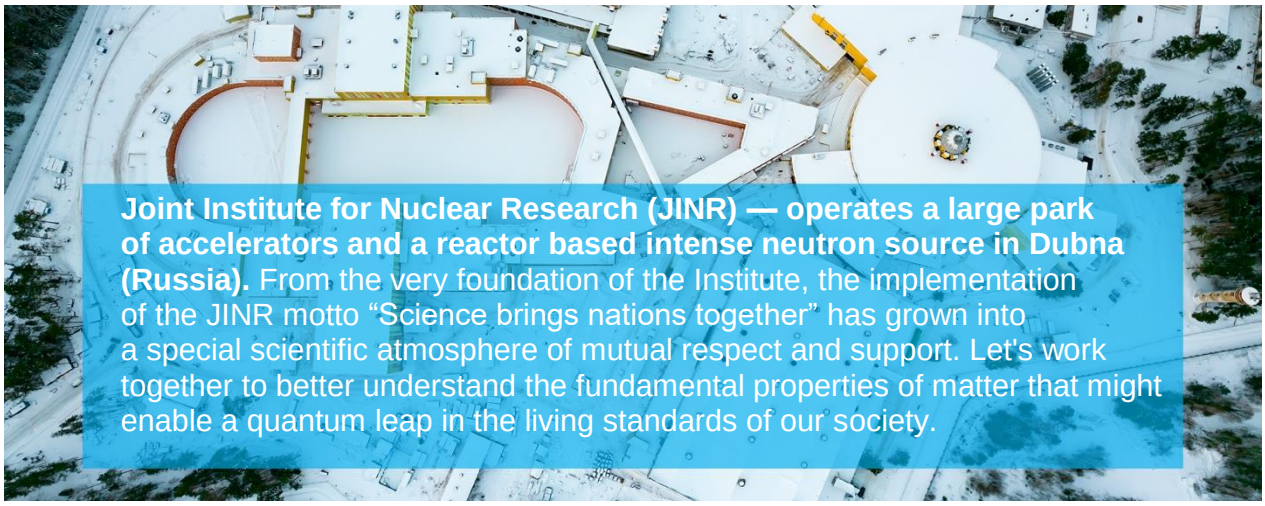
*The average per capita income in the Moscow region is 110 thousand rubles.

Benefits

We offer considerable social benefits: annual paid leave of 42 calendar days with an additional one-time payment of 50 % of your monthly salary after one year of work, air fare (except for family members) at the beginning and the end of the employment period in case the terms of the contract are fulfilled, accommodation (50 %, without cost of utilities and furniture rental), free local health

insurance for you and your family members, relocation assistance (reimbursement of the cost of excess baggage and transfer from/to airport at the beginning and end of the contract for all family members). 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



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