



## **Postdoctoral Programme in Investigation of Nontrivial Superconducting and Magnetic States at Low-Dimensional Heterostructures**

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

### **Your mission**

The main objective of this position is to understand the formation of the nontrivial superconductivity and magnetism at low-dimensional heterostructures by means of polarized neutron reflectometry. These include such materials and phenomena as fractal superconductivity in a quasi-periodic system, uranium and rare-earth magnetic superconductors, nematic transitions, intertype superconductivity, superconductivity in hydrogenated high-temperature superconductors, altermagnetism, and frustrated magnetism. This will allow to understand mechanism of superconductivity and magnetism at such materials. These investigations are useful for creation of new elements of superconducting spintronics and superconducting quantum computing. The work will be carried out in direct collaboration with The Tsung-Dao Lee Institute (TDLI) at Shanghai Jiao Tong University (SJTU) and will be prioritized for a subsequent postdoc position with tenure-track opportunities at the TDLI: <https://tdli.sjtu.edu.cn/en/post/14764>. The successful applicant will work with Dr. Vladimir Zhaketov at JINR and Prof. Vadim Grinenko at The Tsung-Dao Lee Institute at Shanghai Jiao Tong University (SJTU).

### **Your tasks**

You will work with our Polarized neutron reflectometry group at the reflectometer REMUR. Your research Programme will focus on:

- Investigations by polarized neutron reflectometry of superconducting and magnetic low-dimensional heterostructures that are manufactured by magnetron sputtering or molecular beam epitaxy.
- Studies of magnetic structure and phase transitions using existing setups.

- Assistance to the scientists in charge of REMUR when they welcome users for experiments with a similar scientific scope in order to further develop your 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 allowed. The work will be carried out at the neutron sources, 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, materials science, solid state physics or in a similar field.
- Age under 40, have not had more than 3 temporary positions.
- Strong background in experimental physics or materials science is a prerequisite.
- Practical experience in reflectometry or relevant neutron scattering methods and superconductivity and/or magnetism research would be advantageous.
- 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).

*\* Winners of last year's JINR Postdoctoral Programme and JINR Fellowship Programme who were previously employed at JINR are not eligible to participate in the contest again, as current JINR employees.*

*Candidates from JINR Member States are considered for employment at the Institute by nomination from JINR Member States Plenipotentiary Representative.*

## 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 2026, the exchange rate is 92.2 Russian rubles per 1 USD.\*

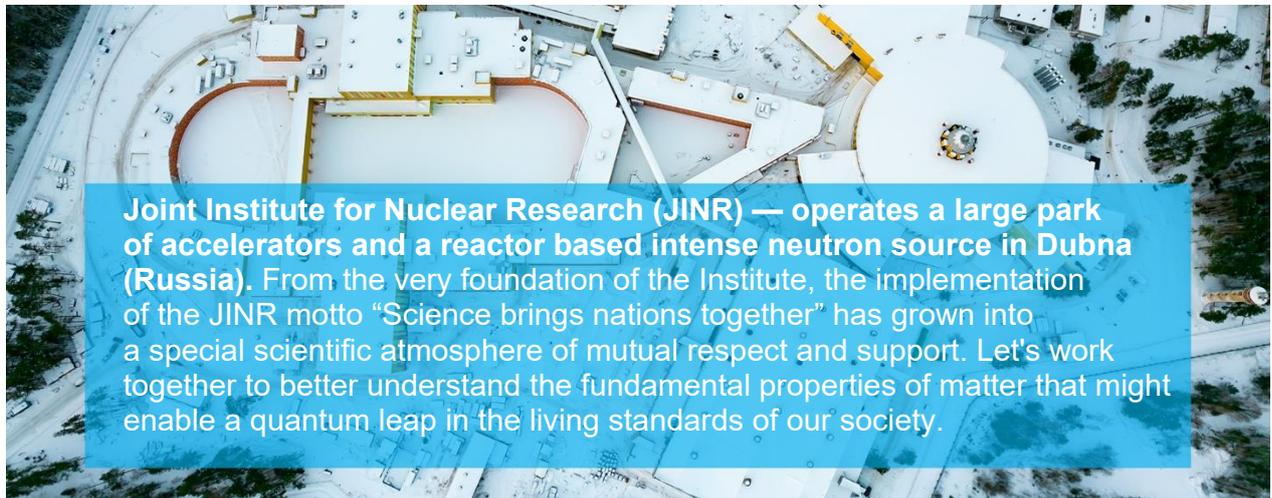
Income tax of 13% is applied. The employer shall pay no pension insurance.

\*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, climbing wall, 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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