INTERNSHIP OPPORTUNITIES FOR INTERNATIONAL STUDENTS STUDYING UNDER THE NUCLEAR POWER PLANTS PROGRAM

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Introduction

One of the most important issues that constitutes an obstacle for a foreign student studying in nuclear engineering is linking the extensive scientific knowledge that we obtain with practical reality and effective vocational training, while training in institutions and companies, such as Rosatom, is difficult, because nuclear energy institutions are secret and do not accept foreign students for practice.

Digital technologies are being actively introduced to solve this problem [1]. But, it is a serious problem of the lack of the possibility of consolidating theoretical knowledge in practice (real production). The purpose of the work is to find a solution to the existing problem, hence the START program was one of the most important solutions through which one can release creative charges and explore what is new.

Advanced Research Training for Students (START programme) Participation in the Joint Institute for Nuclear Research's curriculum (JINR), entails working on a high-level research project under the guidance of a JINR specialist. Within the indicated time frame, invited students are given a 6- to 8-week stay in Dubna (Russia). They write a report on the work they did during their visit that is placed on the program website after they leave.

From their third year of undergraduate studies through their first year of PhD studies, students from all over the world who specialize in science, engineering, and IT are welcome to apply to START, an on-site JINR student program. Our main objective is to help JINR laboratories discover young, talented specialists so they can continue working there.

The Joint Institute for Nuclear Research (JINR) is an international, intergovernmental body created by a Convention that was ratified by eleven founding States on March 26, 1956, and registered with the UN on February 1, 1957. JINR is located in the Russian Federation's Moscow Region in the city of Dubna. JINR, a renowned scientific institute, is a pioneer in fusing fundamental theoretical and experimental research with the creation and use of cutting-edge technologies and academic instruction. JINR has a very good reputation in the scientific community [2].

Participation requirements:

- worldwide enrollment of students;
- specialized in IT, science, and engineering;
- from their third year of undergraduate studies through their first year of doctoral studies;
- Those who have never participated in the START program before (JINR Summer Student Programme).

The available scientific fields [2].

• Theoretical Physics: Laboratories:

Bogoliubov Laboratory of Theoretical Physics (BLTP)

• Elementary Particle Physics and Relativistic Nuclear Physics: Laboratories:

Veksler and Baldin Laboratory of High Energy Physics (VBLHEP)

• Nuclear Physics: in one of this Laboratories:

Frank Laboratory of Neutron Physics (FLNP)

Flerov Laboratory of Nuclear Reactions (FLNR)

Dzhelepov Laboratory of Nuclear Problems (DLNP)

• Condensed Matter Physics, Radiation and Radiobiological Research: Laboratories:

Frank Laboratory of Neutron Physics (FLNP),

Laboratory of Radiation Biology (LRB).

• Networking, Computing, Computational Physics: Laboratories:

Laboratory of Information Technologies (LIT).

The program's advantages

You have the chance:

- receive training at the JINR facilities that are already operational.
- participate in the international team.
- decide what will be the subject of their next thesis.
- track down a scientific mentor
- create beneficial contacts
- increase their potential for employment by JINR.

Implementation experience

I applied for JINR registration in May 2022, I was accepted to participate from August 21 to October 1, in the scientific field of nuclear physics in Frank Laboratory of Neutron Physics (FLNP), During my participation in this training there, I received training on the Monte Carlo MCNP program (figure 1), which is a powerful scientific program specialized in simulating nuclear reactors. I also started training in the Geant4 program, which is also one of the most important programs specialized in radiation simulation, high-energy applications, and nuclear physics. Accelerators, medical and space sciences, where I received training under the supervision of two specialized supervisors.

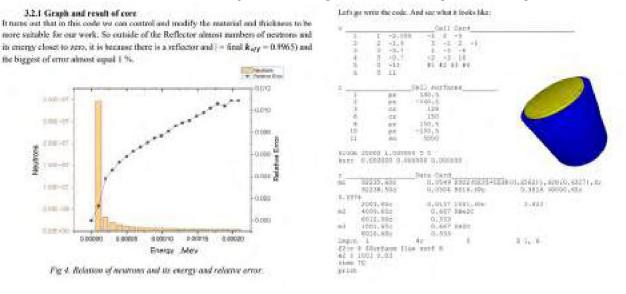


Fig. 1. Out of the training report

It is a wonder of fate that those programs that I trained on, I had searched for them for more than a year in order to learn them, but I failed to find a complete course on the Internet explaining them, or perhaps it was difficult without an expert, so I was very happy that I found what I was looking for.

In addition, we have done some excursions inside JINR (JINR Culture Centre "Mir" to see the exhibition), (the Lab of High Energy Physics), and (Flerov Laboratory of Nuclear Reactions).

I also met a number of participating students from several places (figure 2), I remember from India, Russia, Azerbaijan, Serbia, Belarus and Egypt. We talked about several issues of science, work and different cultures. Our culture is all different, but we all agreed on science, so the slogan there used to say (science brings nations together), And we're still in touch until now.

Conclusion

In the end, I express that participation in this program allows us to enhance the theoretical knowledge gained at the university in a practical way, and gives us confidence in teamwork, and I also express that we always need such programs, and that different cultures meet and work together under the slogan Science enhances students' mental methodology.



Fig. 2. Our group

Acknowledgement

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LITERATURE:

- Лавриненко, С. В. Цифровизация подготовки кадров для предприятий атомной энергетики в современном техническом вузе / С. В. Лавриненко // Реализация образовательных и профессиональных стандартов в психологии и педагогике : сборник статей по итогам Международной научно-практической конференции, Пермь, 29 апреля 2022 года. – Стерлитамак: Общество с ограниченной ответственностью "Агентство международных исследований", 2022. – С. 88-90. – EDN EHXFNN.
- 2. START STudent Advanced Research Training at JINR. https://students.jinr.ru/in-dex.php#projects (accessed Nov. 13, 2022).
- 3. Joint Institute for Nuclear Research | Science brings nations together. http://www.jinr.ru/main-en/ (accessed Nov. 13, 2022).

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