भारतीय प्रौद्योगिकी संस्थान तिरुपति
INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
CENTRE FOR
SPONSORED RESEARCH AND CONSULTANCY
Yerpedu – Venkatagiri Road, Yerpedu Post, Tirupati District, A.P – 517619

No.: Advt/ IITT/CSRC/24-25/45 **Date: 11-02-2025**

Applications are invited from eligible Indian nationals for the Junior Research Fellow in a time-bound sponsored project undertaken in the Department of Physics.

Position	Junior Research Fellow (JRF)
Number of vacancies	2
Essential Qualification	• B.S.-M.S. 5-year Integrated in Physics/ 2-year M.Sc. in Physics and/or 2-year M.Sc. in Applied Physics/ or B.S./B.Tech./B.E. in Physics/Engineering Physics/Radio Physics or M.Tech./M.S. (by research)/M.E. in Electronics/Radio Physics/Laser Technology with minimum of 60% marks. • Must have a valid GATE/CSIR-UGC NET including LS and/or JRF and/or valid JEST score • Minimum aggregate CGPA is 7 out of 10 or aggregate percentage marks 70% out of 100% *Relaxation:* • CGPA or 70% for OBC/EWS • 6.5 CGPA or 65% for SC/ST/PWD
Project No.	PHY2425004DSTXARIJ
Project Title	A multi-node quantum repeater network for entanglement distribution-based quantum communication
Sponsoring Agency	Department of Science and Technology
Principal Investigator	Dr. Arijit Sharma
Department	Physics
Monthly Salary	INR 37000/- + HRA as applicable (9% for Tirupati city)
Tenure of Assignment	Initially 1 year, extendable up to one more year of project subject to satisfactory performance. Upgradation to SRF possible after 2 years subject to satisfactory performance and review by expert committee.
Desired Experience	Good knowledge of more than one of the following topics at the M.Sc. Physics level - Atomic and Quantum Physics - Electronics - Optics - Electromagnetic Theory - Atomic and laser spectroscopy - Hands on experimental exposure to M.Sc. level experiments in optics/atomic physics/lasers/analog electronics • Prior demonstrated experience of working in experimental optics and/or experimental atomic and molecular physics.

	• Prior demonstrated experience with precision laser spectroscopy/ laser cooling/ ion trapping/ atom trapping and related areas. • Prior demonstrated experience with modelling of light-matter interaction in warm atomic vapor/cold atom/ion trap systems. • Demonstrated theoretical ability to model and simulate physics of cold atom/warm vapor quantum memories/repeaters/ etc. • Exceptional candidates with a strong academic performance through their undergraduate and postgraduate programs with either a relevant publication record or a strong background in quantum optics/atomic physics may be considered for this opportunity. In addition, such exceptional candidates who may only have a theoretical background in light-matter interaction in warm atomic vapor/cold atom/ion trap systems and/or physics of cold atom/warm vapor quantum memories/repeaters/etc. will be considered for this opening. Such candidates will need to provide an additional letter of recommendation/reference from their previous academic supervisor who may comment on the candidate's academic and research potential. Must demonstrate highest work ethics, commitment and dedication to the project.
Nature of Work	- Research and development - Design and development of laser spectroscopy set-up - Data recording and documentation of the research work - Critical analysis of the experimental results - Assist in any other associated experiment - Offline on campus physical presence is needed - Remote work not possible - Supervision and mentoring of interns - Attending meetings, workshops, conferences - Reporting of experimental data, observations and outcomes in the nature of peer-reviewed manuscripts - Possibility to register for a PhD program connected to the project subject to suitable performance, passing the admission test and meeting the eligibility conditions advertised for the PhD program by the Department of Physics, IIT Tirupati - Teaching responsibilities and supervision of undergraduate and postgraduate students The selected candidate will get an opportunity to work on interdisciplinary areas those are required for setting up of the experiment. Some of these are (but not limited to) simulation; designing, fabrication, testing of indigenous instruments in the field of lasers & optics, developing low-noise analog & digital electronics, developing FPGA based systems, ultra-high vacuum, mechanical & software development, neutral atom trapping and so on. Apart from the development of the experiment, they will have to work on simulation and modeling of physics problems that are necessary to meet the experimental goals using open source and/or proprietary software. Developing a complete experiment involves multiple work-packages and developing those requires expertise in interdisciplinary fields. Within a lab, this can be achieved by working in collaborative manner. The work shall involve laser cooling techniques applied to neutral rubidium (Rb) atoms. It will also involve precision laser spectroscopy,

	experimental quantum optics and applications of quantum information processing protocols. The final objective is to develop a cold atom quantum memory node for quantum repeater applications.
Age Limit	Age limit - Not more than 28 years
Any other requirement/ Supporting material required	1. Self-attested academic certificates and transcripts from undergraduate level to postgraduate level. 2. A copy of the current CV, a copy of the Statement of purpose (SOP) and motivation letter. 3. One letter of recommendation required from a former academic faculty or a project supervisor (faculty).
Mode of selection	1. Shortlisting based on CV, SOP and motivation letter and the LOR. 2. Online interview of the shortlisted candidates. 3. Candidate needs to join duty within 7 days of intimation of selection by the committee.
Application Last date	26-02-2025
Application Link	https://forms.gle/bk48XoB2oYHGdvqq5

The shortlisted candidates will be informed by Email only. Selection will be based on the qualification, experience, and in-person interview at IIT Tirupati. No TA/DA shall be paid to candidates appearing for an interview online or offline. The interview date will be notified to the shortlisted candidates by Email. For any queries send mail to csrc_recruitment@iittp.ac.in

IIT Tirupati also reserves the right to discontinue the position with 1month notice if the performance is not satisfactory.

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