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/24-25/46 **Date: 11-02-2025**

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

Position	Research Associate III (RA III)
Number of vacancies	2
Essential Qualification	Ph.D. in Physics or equivalent degree with minimum 75% marks or 7.5 CGPA during Ph.D. (graduate) and above 6.5 CGPA (or equivalent percentage of 65%) during M.Sc./B.E/B.Tech./M.E/M.Tech. coursework. *Relaxation:* 7.0 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 67000/- + HRA as applicable (9% for Tirupati city)
Tenure of Assignment	Initially 1 year, extendable up to three more years of project subject to satisfactory performance and annual review by expert committee.
Desired Experience	Good knowledge of more than one of the following topics at the M.Sc. Physics and PhD level - Atomic, Molecular and Optical Physics - Electronics - Quantum Mechanics - Quantum Optics - Electromagnetic Theory - Atomic and laser spectroscopy - Finite Element Modelling and Simulation using COMSOL/ANSYS - Knowledge of ORCAD/EAGLE - Hands on experimental exposure in AMOP (Atomic, Molecular, and Optical Physics) experiments at the PhD level • Ph.D. in Physics / Electronics / Instrumentation / Optical engineering/ other related areas. Candidates who have submitted/ defended their Ph.D. thesis and are waiting for final degree can also apply. • Must have worked for at least one year at the RAI/RAII level. • Experience in programming with any one of the following: Python/ MATLAB/ Mathematica / VHDL/ Verilog/ LabVIEW/ SolidWorks / COMSOL/ ANSYS/ digital & analog electronics/ optics/ fabrication will be useful.

	• 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. • Having at-least one original research paper in SCI and or a peer-reviewed journal. Preference shall be given to candidates with more than one publication in a SCI indexed journal. • Must be willing to work efficiently in a team environment with other students, research and project staff and postdoctoral fellows, self-motivated, and work under a variety of challenging research conditions. • Must have good oral and written communication skills evident through peer-reviewed publications and presentation of work in national/international conferences/workshops/school/meetings/etc. • Experience with supervision of PhD/Masters students • Exceptional candidates with a very strong publication record having only 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 subject to fulfilling of the criteria. Such candidates will need to provide an additional letter of recommendation/reference from their previous academic supervisors who may comment on the candidate's academic and research potential as well as their intellectual output and abilities. 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 research students and interns - Attending meetings, workshops, conferences - Reporting of experimental data, observations and outcomes in the nature of peer-reviewed manuscripts - Teaching responsibilities and supervision of undergraduate and postgraduate students The selected candidate will get 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 36 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. A brief research proposal on cold atom quantum memory. 4. Two letters of recommendation required one of which must be from your thesis supervisor (PhD research guide). 5. In case of exceptional candidates as mentioned above, three letters of recommendation are required one of which must be from your thesis supervisor (PhD research guide).
Mode of selection	1. Shortlisting based on CV, SOP, motivation letter, research proposal and the LORs received. 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.

Dean-CSRC