INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
भारतीय प्रौद्योगिकी संस्थान तिरुपति
Renigunta Road, Settipalli Post, Chittoor District, Tirupati – 517506

No: Advt/ IITT/CSRC/2021-22/10 **Date: 23 December 2021**

Applications are invited from eligible Indian nationals for the post of Postdoctoral Fellow in the time-bound research project under the **Chanakya Post-Doctoral Fellowships in Quantum Technology Scheme** of **I-Hub Quantum Technology Foundation, Pune** undertaken in the Department of Physics, IIT Tirupati.

Temporary Position **Essential Qualification**	**Postdoctoral Fellow-01** Ph.D. in Physics or equivalent degree with minimum 75% marks or 7.5 CGPA during Ph.D. (graduate) and/or M.Sc./ M.Tech. coursework.
Project Title	Development of A Deterministic Single Photon Source for Quantum Networking Applications
Sponsoring Agency	I-Hub Quantum Technology Foundation, Pune. (Chanakya Post-Doctoral Fellowships in Quantum Technology Scheme)
Consolidated monthly Salary	INR 80,000/- per month consolidated. The salary will be directly paid by I-Hub Quantum Technology Foundation, Pune to the selected Postdoctoral Fellow.
Principal Investigator	Dr. Arijit Sharma
Department/Centre	Physics
Tenure of Assignment	Initially 1 year with a possible extension of 2 more years subject to satisfactory appraisal, performance review and availability of funding from I-Hub Quantum Technology Foundation, Pune.
Desired Experience	• Ph.D. in Physics / Electronics / Instrumentation / Optical engineering/ Optics/ Laser Spectroscopy/ Photonics/ other related areas. Candidates who have submitted/ defended their Ph.D. thesis and are waiting for a final degree can also apply. Preference shall be given to candidates with an experimental background and training in optics and/or atomic and molecular physics. • 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. • Having at-least two original research papers in SCI and or a peer-reviewed 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. • Must demonstrate highest work ethics, commitment and dedication to the project.
Nature of the Work	The selected candidate will get an opportunity to work on interdisciplinary areas that are required for setting up 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, ion and atom trapping and so on. Apart from the development of the experiment, they will have to work on physics problems that are necessary to meet the experimental goals. 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 a collaborative manner. The work shall involve laser cooling and ion trapping techniques applied to Calcium ($^{40}Ca^{+}$) ions. It will also involve precision laser spectroscopy, experimental quantum optics (cavity qed) and applications of quantum information processing protocols. The final objective is to develop a cavity-qed based deterministic single photon generator for quantum networking applications.
Age Limit	36 years (Relaxed for exceptional candidates)
Last date application	20 January 2022
Notes	Given the nature of the project, work needs to be carried out in the laboratory. Therefore, it is expected that the candidate resides on-campus IITT to use the laboratory facilities to complete the tasks.

Applications are encouraged from those who have prior experimental expertise in some of the mentioned areas together with good knowledge in Physics, Optics and Electronics. Highly motivated candidates who are willing to take-up new challenges and interested to learn new topics are encouraged to apply. Candidates with a training and background in both theory and experiments in the above areas are also encouraged to apply. The candidates have to fully engage themselves to deliver fruitful work in a collaborative manner. The selected candidates will have an ample opportunity to work with other national and international collaborators.

Eligible candidates **should submit the following documents as a single pdf file:**
(i) A detailed curriculum vitae (CV) mentioning theoretical, experimental, instrumentation or other working experience,
(ii) List of publications,
(iii) Statement of purpose and
(iv) Two confidential letters of reference sent directly by the persons recommending to arijit@iittp.ac.in for full consideration on or before **20 January 2022** to Dr. Arijit Sharma, Assistant Professor, Department of Physics, IIT Tirupati at **arijit@iittp.ac.in** .

The statement of purpose must include responses to the following questions:

1. What motivates you towards pursuing the postdoctoral position? (max. 300 words)
2. Describe your research experience in the advertised area. (max. 500 words)
3. Briefly explain the tentative research plan by using schematics, figures, flowchart, and relevant references. (max. 1000 words).

The shortlisted candidates will be informed by **email only**. Selection will be based on the qualification, experience, and interview**. The interview and other logistics will be conducted via online only.** The interview date will be notified to the shortlisted candidates by email. Candidates may appear in the interview through video conferencing. IIT Tirupati reserves the right to reject any or all the applications without assigning any reason thereof. No TA/DA shall be paid to candidates appearing for an interview online. **Selected candidates will need to join their duty within two weeks of acceptance of the offer for the fellowship**.

Dean, CSRC