

No. Advt/ IITT/CSRC/26-27/10

31-08-2026

Applications are invited from eligible Indian nationals for the post of **Research Associate** in a time bound **National Quantum Mission (NQM) sponsored project by the Department of Science and Technology (DST)** undertaken in the Department of Physics.

<u>Temporary Position</u>	Research Associate
Essential Qualification	• PhD in Many-body Quantum Chaos (The candidates having Ph.D. in Theoretical Quantum Physics, Quantum many-body theory, Quantum Computation and Information Theory or a closely related discipline may also apply) • Candidates who have submitted their Ph.D. thesis in a relevant area (as mentioned above) are also eligible to apply.
Project No.	PHY2627004DSTXARAV
Project Title	Towards Quantum Advantage : Design and Development of Algorithms, Codes and Protocols
Sponsoring Agency	National Quantum Mission (NQM), Department of Science and Technology (DST)
No. of positions	01
Consolidated monthly Salary	Depending on the number of years of post-PhD experience as per the DST norms. Rs. 58000 /- (RA I) Rs. 61000 /- (RA II) Rs. 67000 /- (RA III)
Principal Investigator (IITT)	Dr. Aravinda S
Department	Physics
Project Duration	3 years
Tenure of Assignment	Initially for one year, extendable by up to three years, subject to satisfactory performance and the availability of project funding.
Brief Project Description and Nature of Work	Developing an algorithmic toolbox for efficiently generating and certifying random quantum states and circuits, with a view to demonstrating quantum advantage on near-term quantum devices.

	This project will integrate advanced techniques from random matrix theory, unitary k-designs, and quantum state designs to systematically investigate dual-unitary and Bernoulli circuits. We will employ structured random state generation protocols, including quantum chaos-based methods and projective ensemble techniques, to produce approximate Haar-random states with optimal resource efficiency. Random matrix techniques will be applied to characterize spectral statistics and entanglement properties, with particular attention to the transition from integrable to chaotic regimes in parameterized circuit families. For numerical simulations, we will combine exact diagonalization (for small systems) with tensor network methods (for intermediate scales) to validate the t-design properties of generated states through fidelity measures. The results will be implemented in quantum computational hardware.
Desired Experience	Strong background in theoretical physics and/or quantum computing/quantum information. Theoretical background in Random Matrix Theory and Quantum Chaos will be preferred. Demonstrated experience in numerical modelling and simulation of physical systems. Good research publication record and ability to communicate research results through scientific papers and presentations.
Age Limit	Not more than 35 years (Relaxation will be given reserved category candidates as per institute norms)
Last date of application	14-09-2026
Additional Note	The project will be a collaborative work with Prof. Arul Lakshminarayan (IIT Madras) The nature of the project is Mult institutional and candidates may get opportunity to work along the partner institutes (IIT Madras, IIT Hyderabad, IIT Ropar).
Application Link	https://forms.gle/5VZhYizuHszgV4QbA

Eligible candidates must attach a detailed CV specifying their qualifications and experience, along with scanned copies of their mark sheets and certificates from X class to date. A brief statement of purpose (Why are they interested in this project topic?) should also be attached to the application link. Essential qualifications will be relaxed for the outstanding candidate.

The shortlisted candidates will be informed by email only. Selection will be based on the qualification, experience, and an in-person/online 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 1-month notice if the performance is not satisfactory

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