

RAMAN RESEARCH INSTITUTE

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Announcement of opportunity for experimental research in Quantum Communications

Raman Research Institute invites applications from individuals for Junior Research Fellow (JRF) positions in the domain of experimental quantum communications. Motivated candidates who wish to pursue a PhD degree are encouraged to apply. This project will lead to the induction of the candidate into the RRI PhD programme, on fulfilment of excellent performance criteria at an interview that will be held a minimum after six months into the position. The candidates must possess excellent and consistent academic record and core competence and research aptitude in Physics.

The Quantum Information and Computing (QuIC) lab of RRI is working on several approaches in secure quantum communications. As algorithmic breakthroughs and imminent advent of quantum computers both pose immense threats to classical key distribution based communication tools, quantum key distribution proves to be the only available means of providing information theoretically secure avenues of secure communications, especially important in strategic sectors like banking and defence. The following two projects have the open PhD positions.

One of them is an ambitious project on “**Long Distance Quantum Communications: Repeater and Relay technologies**” under the Quantum Enabled Science and Technology Programme of the Department of Science and Technology, Govt of India (<http://210.212.36.85/quest/People/urbasi.html>). This involves collaborations with Prof. Arun Pati, Prof. Ujjwal Sen and Prof. Aditi Sen De (HRI).

The second project is a mega project on Quantum Experiments with Satellite Technology (QuEST) in collaboration with the UR Rao Satellite Centre (URSC) of the Indian Space Research Organization (ISRO) [http://www.rri.res.in/quic/landing_QKD.php]. The project is aimed at developing quantum communications technologies using satellites. Through this project, RRI with support from the URSC will develop new tools in quantum key distribution which will also involve satellite based technologies.

We are currently looking for two **Junior Research Fellow (JRF)** appointments within the QuIC lab, Light and Matter Physics group of the Institute. The candidate will be initially hired as a JRF for one year. If the candidate exhibits excellent research acumen, he/she will be recommended for a PhD entrance interview by the PI (between six months to one year after joining the position). A successful interview will lead to induction into the RRI PhD programme to continue working on the research with the PI, towards a PhD degree.

Candidates who have qualified National Eligibility Tests- CSIR-UGC NET including lecturership, GATE or national eligibility examinations conducted by Central Government departments and their agencies and institutions such as DST, DBT, DAE, DOS, DRDO, MHRD, ICAR, ICMR, IIT, IISc, IISER etc. are eligible for the position.

Remuneration: Junior Research Fellow– Rs. 31,000/- + admissible HRA(presently at 27%)
(for the first two years)
Senior Research Fellow – Rs. 35,000/- + admissible HRA(presently at 27%)
(third year onwards)

Eligibility:

Age: Not more than 28 Years as on the closing date for receiving the completed application forms online. Age relaxation may be considered for candidates with relevant research experience.

Essential:

Masters' degree (Physics/ Engineering Physics/ Photonics). Candidates who have appeared for the final exam and are waiting for their final results are also eligible to apply.

Desirable:

The candidate should be motivated and should have a flair for experimental work as well as programming skills. 75% or more marks in aggregate or equivalent CGPA in the qualifying course is desirable. Completed course-work in quantum physics and optics is desirable.

Tenure:

Five years or such extended period as per the project requirement. The extension will depend on satisfactory performance in bi-annual reviews.

The candidate should have experience in one or more of the following –

1. Prior experience of working in an optics based lab environment and familiarity with practical handling of optical and opto-mechanical components.
2. Knowledge in controlling of equipment using Labview.
3. Previous work experience in quantum information/ quantum communication based research work and familiarity with basic concepts in the field through course work, online classes etc.
4. Programming knowledge in Matlab/ Mathematica/ C++/ Python.

Selection procedure:

Candidates who qualify in the required criteria will be called for an interview. The interviews will be held online.

Applications may be sent to quic-job@rri.res.in. The application should consist of the candidate's CV with academic qualifications details, work experience details as well as a statement on fulfilment of essential and desirable (if applicable) criteria.

Closing date for receiving the applications: 17th February 2023

Applications received after the last date will not be considered.

General Information:

- Those who are already working in Government/Semi Government/PSU/Autonomous Bodies shall submit their applications through proper channel.
- The Institute reserves the right to restrict the number of candidates for interview to a reasonable limit, on the basis of qualification and experience higher than the minimum prescribed in the advertisement. Mere fulfilling the essential and desired qualifications will not entitle an applicant to be called for interview.
- Age relaxation will be applicable as per Govt., of India rules for the candidates belonging to SC/ST/OBC/Persons with disabilities categories.
- Second Class train fare for attending interview shall be reimbursed to the candidate on provision of original tickets.
- This is a project-based position. Remuneration shall depend on existing grants.
- The institute reserves the right to relax any of the above requirements in exceptional cases.
- The Institute reserves the right not to fill the posts herein advertised. Canvassing in any form shall disqualify the candidate.