3rd December 2025
IIT Hyderabad

Advertisement for Junior Research Fellowship (PhD)

Focus Areas: Integrated Optoelectronics, Quantum Technologies and Nanofabrication

Application Form: https://forms.gle/MSZ6YkP3f7p9yeWX9

Title of the Project:	Development of Electronic and Photonic Integrated Circuits (EPICs) for quantum communication
Principal Investigator	Dr. Emani Naresh Kumar, Associate Professor, EE Department Webpage: https://people.iith.ac.in/nke/
Funding details:	National Quantum Mission (https://dst.gov.in/national-quantum-mission-nqm) – Quantum Communication Vertical – TG1 (https://www.samgnya.in/)
Duration:	4 years and extendable for 1 additional year
About the project	The current commercial Quantum Key Distribution (QKD) solutions have low key rates, limited range, high cost and are not scalable. An integrated (on-chip) QKD solution is expected to alleviate these limitations. The development of integrated electronic–photonic platforms for QKD transceivers remains at an early stage worldwide, particularly when compared to the maturity of conventional datacom transceivers. This gap highlights a significant opportunity for advancing QKD through novel InP PIC architectures, high-speed driver integration, and rigorous device–system co-design. In this project, the applicant will investigate the co-design of InP photonic elements—lasers, modulators, attenuators, and photodetectors — and the associated high-speed electronic driver and receiver circuits. They will develop compact electro-optic and RF models of the photonic devices, explore packaging and interconnect strategies, and establish methodologies for co-optimization of bandwidth, extinction, and noise performance. The JRF position would prepare the applicant for a career at the forefront of Optoelectronic Integration technologies for Computing, AI and Medical applications.
Emoluments:	• Rs. 37,000/- per month for first two years; upgraded to Rs. 42,000/- per month after 2 years upon satisfactory performance • HRA will be provided if hostel accommodation on campus is not available • Leave as per IITH norms
Eligibility:	• Candidate should not be more than 30 years • 60% Marks or equivalent CGPA in UG or PG degree. Candidates without ME/MTech/equivalent must have a valid GATE score or must have qualified via DST-INSPIRE, CSIR JRF/UGC NET • Master's in Physics/Electronics/Photonics/equivalent with GATE/UGC-NET/CSIR qualification • BTech graduates from CFTI with CGPA 8.0 or above

Requisite Experience:	● Strong fundamentals in electromagnetics, semiconductor devices, quantum mechanics and optics ● Exposure to nanofabrication, optical characterization and nanophotonics is preferable but not mandatory. ● Proficiency in programming in MATLAB/Python along with good communication and writing skills.
How to Apply:	Interested candidates may apply by filling this Google form. The advertisement will be open on a rolling basis till a suitable candidate is found. The Google form will not accept applications once the position is filled.
Selection process:	● Subject to fulfilling eligibility criteria, short-listed candidates will be informed by email**.** Please note that short-listing criteria may be higher than the minimum eligibility criteria. ● Shortlisting/screening of applications will be done **once in two weeks**. ● Online interviews will be held for shortlisted candidates. Please note that multiple rounds of interviews may be held. ● Only selected candidates will be informed by email. ● If you do not meet the eligibility criteria but are passionate about working in this domain, please email the PI at naresh@ee.iith.ac.in

For any specific queries, please email naresh@ee.iith.ac.in