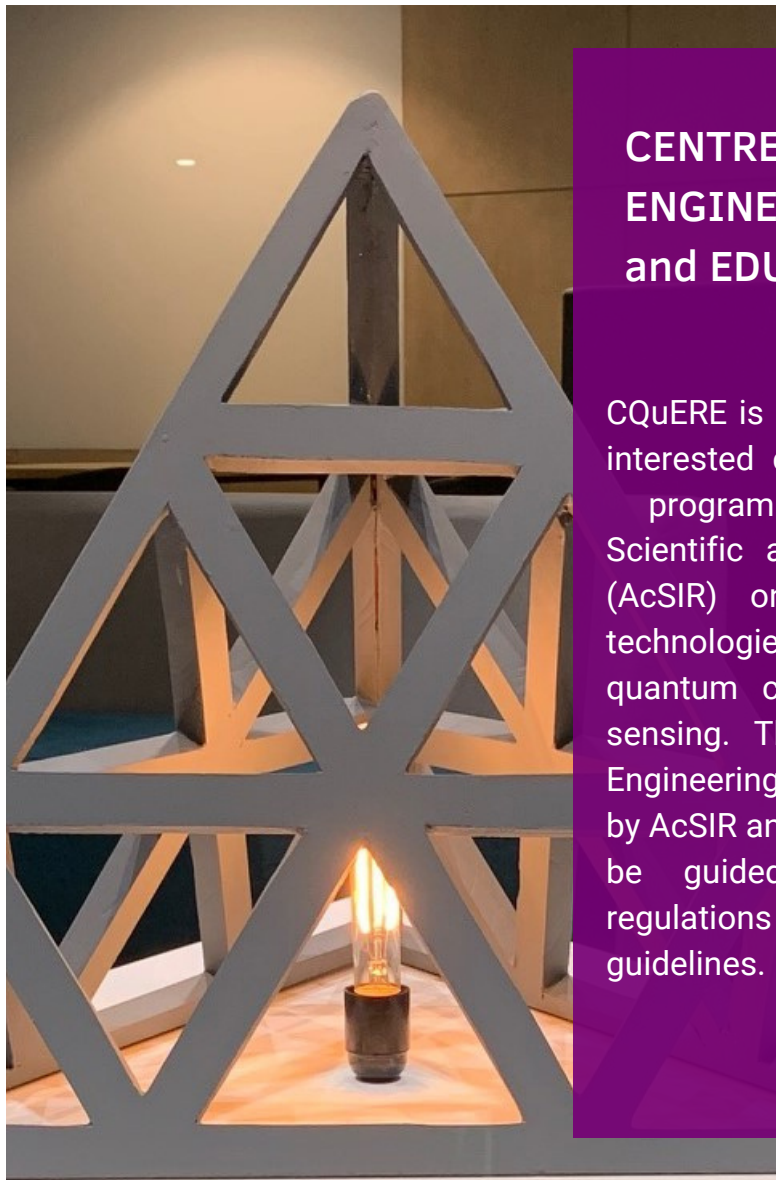


# TCG

## Centres for Research and Education in Science and Technology

# Ph.D. PROGRAM



## CENTRE for QUANTUM ENGINEERING, RESEARCH and EDUCATION ( CQuERE )

CQuERE is inviting applications from interested candidates for the Ph.D. program under Academy of Scientific and Innovative Research (AcSIR) on quantum sciences and technologies with emphasis on quantum computing and quantum sensing. The Ph.D. in Science or Engineering degree will be awarded by AcSIR and the Ph.D. program shall be guided by the rules and regulations of AcSIR Ph.D. guidelines.

### SUBJECT ELIGIBILITY

MSc in Physics / Chemistry (preferably Physical Chemistry), ME / MTech in Engineering Physics & other streams, MS in Computer Science, preferably the students have taken some courses in MSc level Quantum Mechanics. All students, who have qualified NET / INSPIRE / JEST / GATE / CSIR / DST / DBT or other equivalent tests in the areas of Physics / Chemistry / Engineering / Computer Science can apply.

### INSTITUTIONAL JRF

as per the norms of national funding agencies  
(inclusive of HRA)

### APPLICATION DEADLINE

31st May, 2023



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Inventing Harmonious Future

tcgcrest.org

98369 19301

info.cquere@tcgcrest.org

visit <https://tcgcrest.org/cquere-programs/> for more details

# Ph.D. @ CQuERE



CQuERE offers a Ph.D. in Science or a Ph.D. in Engineering program on Quantum Sciences and Technologies under Academy of Scientific and Innovative Research (AcSIR).

## Research Focus Areas

The areas of research currently being pursued at CQuERE are quantum computation (theory), quantum computing using superconducting quantum circuits, photonic integrated circuits for sensing and computing, quantum computing and sensing using cold atoms, quantum algorithms and machine learning.

Please visit <https://www.tcgcrest.org/cquere-programs/> for more details.



### 01 Fellowship and Travel Support

Competitive Institutional Junior Research Fellowship (Inclusive of HRA) as per the norms of national funding agencies shall be given to the selected candidates who don't have national level fellowships. Students shall be promoted to Senior Research Fellowship (SRF) after two years as JRF, subject to satisfactory performance in the coursework and the clearing of the Comprehensive examination. An appropriate contingency amount and travel support may be provided for attending National/International conferences and other such expenses.

### 02 Degree Granting Institute

The Ph.D. (Science) and Ph.D. (Engineering) degree will be awarded by Academy of Scientific and Innovative Research (AcSIR) and the Ph.D. program will be guided by the rules and regulations of AcSIR Ph.D. guidelines.

### 03 Selection

Selection of the candidates will be made solely based on their performance in the interview. Candidates will be shortlisted based on their previous academic record. In total, this year twenty seats are available in Quantum Sciences.

# AcSIR Eligibility

## General Eligibility Requirements of AcSIR

### Ph.D. in Science

Candidates with a Master's degree in Science or equivalent are eligible to apply. The candidate should be having a valid National level fellowship (JRF/ SRF of various funding agencies, e.g. CSIR, UGC, DBT, DST etc.) or any other equivalent fellowship like INSPIRE, RGNF etc. Sponsored candidates with a Master's degree in Science or equivalent are eligible to apply with endorsement from Industry, Academic or Research Institutes with required academic leave and financial support during the program.

### Ph.D. in Engineering

(i) Candidates with a Master's degree in Engineering or Technology following a four-year engineering/technology or 4/5 year science degree; or an integrated minimum-5-year M Tech degree; or equivalent are eligible to apply. The candidate may have a valid national-level fellowship (such as NET JRF, CSIR SRF, GATE) tenable at CSIR institutes.

(b) Meeting all the conditions for award of the INSPIRE fellowship (typically awarded to students ranked first in the University).

(c) Meeting all the conditions stipulated by AcSIR for industry sponsored students.

Candidates without national fellowships are also welcome to apply. If selected, following the AcSIR guidelines, TCG CREST institutional fellowship will be provided.



# Team



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## Bhanu Pratap Das, Director, CQuERE

Professor Das' research area is applications of quantum computing to physical phenomena in quantum many body systems. He received his PhD from the SUNY at Albany, USA. After postdoctoral fellowships at universities/ institutes in the USA and Germany, he held faculty positions in the USA, UK and India. He was a Professor of Physics at the Tokyo Institute of Technology, Japan.

For details of complete team, please visit <https://www.tcgcrest.org/cquere-people/>

## Scientific Advisory Board



Artur Ekert

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He is a professor at Oxford University and National University of Singapore. He is one of the pioneers of Quantum Cryptography.



Hartmutt Haeffner

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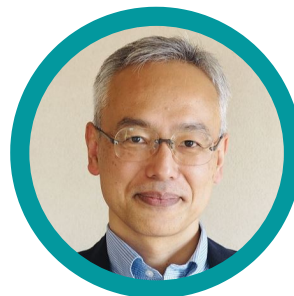
He is a faculty member and a member of leadership team of the Challenge Institute for Quantum Computing at the University of California, Berkeley.



Kenji Ohmori

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He is a professor at the Institute for Molecular Science (IMS), Okazaki, Japan. He is internationally known for his work on quantum simulation and computation using cold atoms.



Yasunobu Nakamura

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He is a Professor at University of Tokyo and the Director of RIKEN Quantum Computing Centre, Japan. He is internationally acclaimed for his pioneering contributions to the development of superconducting qubit-based quantum computing.

# Collaborations

Our institute has established active collaborations with national and international organizations focusing on quantum sciences and technology, encompassing both experimental and theoretical aspects. Our list of collaborators include scientists from:

## Abroad:

University of Tokyo, Riken Quantum Computing Center, Quantum Science and Technology Institute (Okinawa Institute of Science and Technology), Qilimanjaro (Spain), Keio Quantum Computing Center, Centre for Quantum Technologies (Singapore), Centre for Ion Beam Applications (Singapore), and Shizuoka University (Japan).

## India:

IBMQ India, Saha Institute of Nuclear Physics, Physical Research Laboratory (ISRO), IIT Bombay, IIT Madras, IIT Delhi, IIT Kharagpur, NISER Bhubaneswar, Institute of Physics, TIFR, IISER Kolkata, and Amrita Vishwa Vidyapeetham (Amaravati).



# Ph.D. Students



## Ashna Zade

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Ashna completed her BS-MS in Physics from IISER Pune in 2022. Her research interests include Quantum Information and Quantum Computation.



## Abhishek Bhardwaj

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He is a quantum computing enthusiast with an intent to discover and solve problems on quantum devices that can have immediate practical applications.



## Peniel Bertrand Tsemo

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Peniel did his BSc and MSc in Physics from University of Yaoundé. He is also an alumnus of the African Institute for Mathematical Sciences.



## Biplab Biswas

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Biplab did his Master's in Physics from IIT, Palakkad. He is interested in Quantum Computer hardware, especially on superconducting qubit platforms.



## Boni Paul

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Boni graduated with Physics Honours in 2018 from Scottish Church College, Kolkata and completed his Masters from West Bengal State University, Barasat.



## Tushti Asmita Patel

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Did B.Sc in Physics under Mumbai University and completed Masters in Physics from The Indian Institute of Technology, Tirupati.

# About TCG CREST

The Chatterjee Group (TCG) launched the TCG Centres for Research and Education in Science and Technology (TCG CREST), a not-for-profit organisation, with an aspiration to become a leading member of the global science and technology driven innovation ecosystem by collaborating with the global centres of excellence. TCG CREST is focused on creation of strong networks with reputed knowledge centres of the world –universities, research institutions, technology innovators and academic communities. It passionately inculcates a culture of continual knowledge exchange through joint projects, research, student exchange, faculty exchange, collaborative workshops, seminars and colloquiums for knowledge creation, knowledge application and knowledge dissemination for the overall benefit of human society.



# About AcSIR

The AcSIR was established as an Institution of National Importance by an Act of Parliament in 2010 and has been set-up based on a 'Hub and Spoke' model where the hub (AcSIR-HQ at Ghaziabad) is responsible for centralized administrative functions. The spokes are located in the 38 CSIR institutes/units (AcSIR Academic Centres) and 19 non-CSIR Institutes (AcSIR Associate Academic Centres) spread along the length and breadth of India, which act as the academic campuses of AcSIR.

AcSIR is the largest Academic Institution for doctoral research in India having awarded 577 PhD degrees in STEM in 2022 and with more than 6100 students currently registered for PhD. Presently, AcSIR is ranked 3rd by "Scimago Institutions Ranking" (2023), 12th by "Nature Index" (2021-22) and 18th by "NIRF" (2022) in the Research Category, among the academic institutions in India.

visit <https://tcgcrest.org/cquere-programs/> for more details

<https://tcgcrest.org> \* +91 98369 19301 \* [info.cquere@tcgcrest.org](mailto:info.cquere@tcgcrest.org)