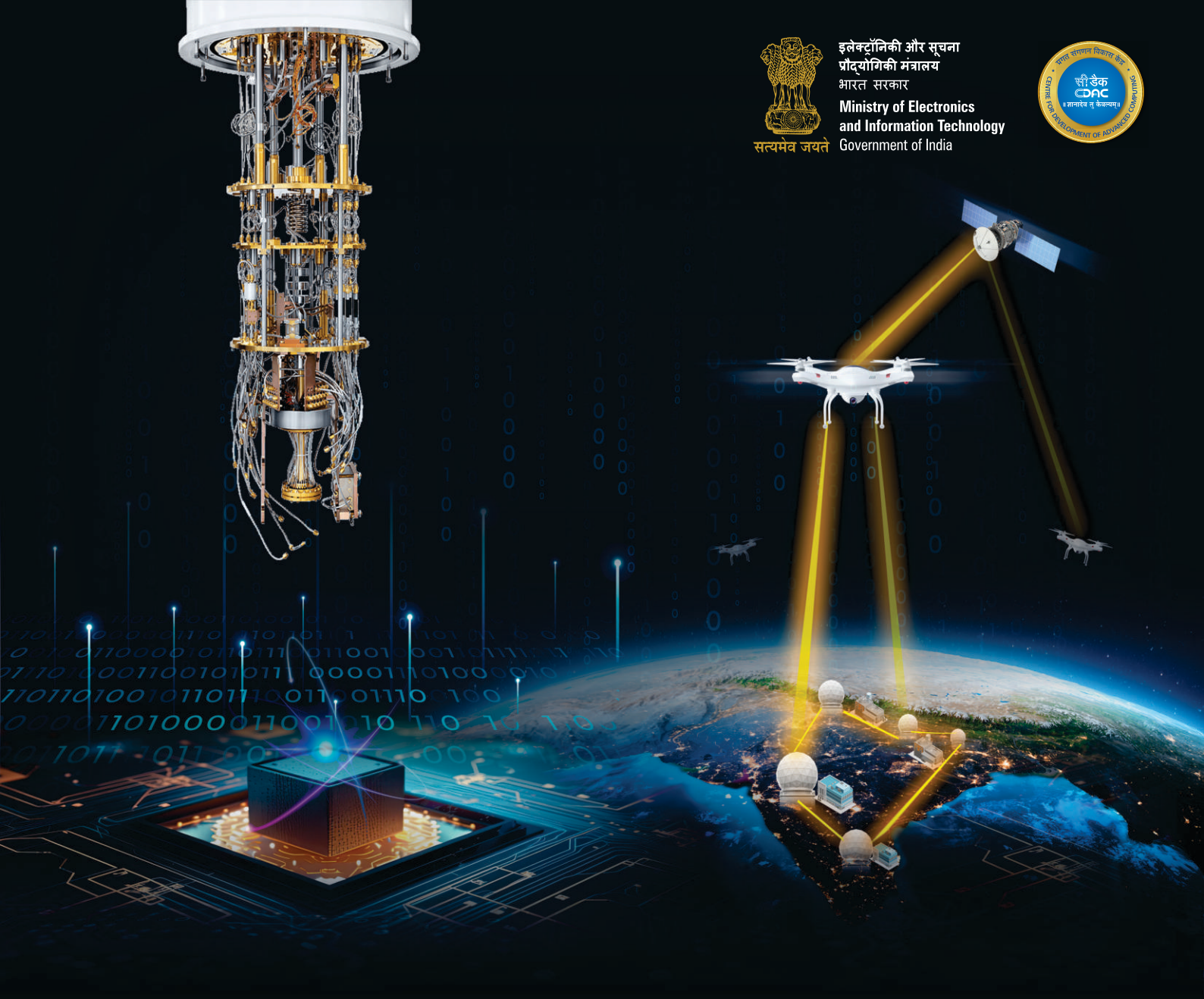

इलेक्ट्रॉनिकी और सूचना प्रौद्योगिकी मंत्रालय
भारत सरकार
Ministry of Electronics and Information Technology
सत्यमेव जयते Government of India

International Workshop on Engineering and Integration Challenges in Quantum Communication and Quantum Computing

21st & 22nd March 2024

Venue :
The Orchid Hotel, Adjacent Chhatrapati Shivaji Sports Complex,
Pune-Bangalore Road, Balewadi, Pune, Maharashtra 411045

PREAMBLE

C-DAC is organizing a workshop titled "Engineering and Integration Challenges in Quantum Communication and Quantum Computing" on the 21st and 22nd of March 2024 in Pune, India.

The workshop seeks to bring all the players both in the Indian and global quantum ecosystem, together on a single platform and look at various technologies, platforms, global developments, and challenges towards stable, sustainable product development.

The workshop will be held in hybrid mode. The intended audience includes academia, R&D organizations, industry/startups, and government agencies. The workshop will feature a variety of interesting talks/tutorials and sessions by industry on varied subjects from optical simulation to quantum circuit design.

FOCUS AREAS

- **Engineering challenges in quantum communication and quantum computing**
- **Cryogenics for quantum computers**
- **Challenges in PQC implementation**
- **Test and evaluation facility for quantum technology devices**
- **Standardization in quantum communication**
- **Quantum optical simulation for QKD**
- **Quantum circuit designing**

SPEAKERS

Prof. Andrew Briggs
Professor of Nanomaterials,
Department of Materials,
University of Oxford &
Chair QuantrolOx, UK

Dr. Rajeev Malik
Program Director,
Systems Development
and Deployment,
IBM Quantum

Prof. Barry Sanders
Professor, Faculty of Science,
Dept. of Physics and Astronomy,
University of Calgary &
Scientific Director, Quantum City

Prof. Vadim Makarov
Professor, National University
of Science and Technology MISiS,
Moscow & Vigo Quantum Communication
Center, University of Vigo, Spain

Dr. Eleni Diamanti
Research Director,
French National Centre for Scientific
Research (CNRS), Paris Centre
for Quantum Computing

Prof. Ulrik L. Andersen
Professor, Section Leader, Dept. of Physics,
Quantum Physics and Information Technology,
Center for Quantum Technologies,
Center for Macroscopic Quantum States

Mr. Matthijs Rijlaarsdam
Co-Founder & CEO,
QuantWare

Prof. Subhadeep De
Associate Professor, Inter-University
Centre for Astronomy and Astrophysics
(IUCAA), Pune

Dr. Aleksey Fedorov
Principal investigator,
Group of Quantum Information
Technologies,
Russian Quantum Center

Prof. Apoorva Patel
Professor, Centre for High
Energy Physics, IISc Bangalore

Dr. Itamar Sivan
CEO, Quantum machines

Shri. Vinod Kumar
Deputy Director General
(Quantum Technology), Dept. of Telecom,
Govt of india

Prof. Archan S. Majumdar
Senior Professor,
S. N. Bose National Centre for Basic Sciences,
Kolkata

Prof. Sushil Mujumdar
Associate Professor, Nano Optics
and Mesoscopic Optics Laboratory,
TIFR, Mumbai

Mr. Vishal Chatrath
Co-Founder & CEO
QuantrolOx, Finland

Prof. Milind Atrey
Dean (Research & Development),
INOX chair Professor of Cryogenics,
Department of Mechanical Engineering,
IIT Bombay

Prof. C. S. Unnikrishnan
Professor, School of Quantum
Technologies, Defence Institute of
Advanced Technology, Pune

Prof. Amlan Chakrabarti
Professor and Director,
A.K. Choudhury School of Information
Technology University of Calcutta

Prof. Anirban Pathak
Jaypee Institute of Information Technology
(JIIT), Noida

Mr. Adarsh Jain
Head of Department,
Space Applications Centre (SAC),
ISRO

Smt. Reena Dayal
Founder & CEO,
Quantum Ecosystems and Technology
Council of India (QETCI)

Mr. Mark Elo
Tabor Electronics Ltd.

Dr. Jin Xiaoyue
Tabor Electronics Ltd.

Dr. Manjunath R. Venkatesh
VP of Quantum Hardware and Research,
QpiAI India Pvt. Ltd.

Dr. Mrityunjay Ghosh
Quantum Computing Principal,
HCL Software

Dr. Uday Wad
Qkrishi

Mr. Arka Mukherjee
Team Leader, QKD Hardware,
Centre for Development of Telematics (C-DOT)

Dr. Dhiman Saha
Assistant Professor
at Department of EECS, IIT Bhilai

Mrs. Chaitanya Palli
Research Scientist,
C. R. Rao Advanced Institute of Mathematics,
Statistics and Computer Science (AIMSCS)

Dr. Prem Laxman Das
Senior Scientist,
Society for Electronic Transactions
and Security (SETS), Chennai

Mr. Parag Kulkarni
Founder and Director,
Muspark Technologies Private Limited

Dr. Abhijit Mitra
Assistant Professor, IIIT Delhi
& Visiting Researcher,
BT India Research Center, IISC Bangalore

Dr. Anindita Banerjee
Scientist, Project Manager,
C-DAC, Pune

Prof. Bhupendra N. Dev
FASc, FNASc, CQuERE,
TCG CREST, Kolkata

Shri. Manoj Jain
Ministry of Electronics & Information Technology

Dr. Sarma Venkatraman
Director,
C. R. Rao Advanced Institute of Mathematics,
Statistics and Computer Science (AIMSCS)

Mr. Rajeev Gambhir
Satcom Industry Association (SIA), India

Dr. Anup Kumar Choudhury
Program Leader, Cryogenics
Inter University Accelerator
Centre (IUAC), New Delhi

Dr. Jedidiah Pradhan
Scientist F, Variable Energy
Cyclotron Centre (VECC), Kolkata

Ms. Shradhanjali Sahu
University of Leeds

HANDS-ON SESSION

Session I- Exploring Quantum EDA Solutions for Superconducting Quantum Systems

Date: 21st March 2024, Time: 5 pm to 8 pm

In this session participants will have the opportunity to gain valuable insights into the cutting-edge Quantum Electronic Design Automation (EDA) solutions, designed to accelerate the design, tuning, and optimization workflow for quantum circuits. The following topics to be covered during the session:-

- Circuit design of superconducting qubits – build simple quantum computing circuits
- Generate quantum Layout design
- EM simulation – learn how to carry out a full-wave EM simulation to analyze a superconducting circuit.
- Modelling of the kinetic inductance in the EM flow
- Extract quantum parameters.
- Learn to generate GDS files - an industry standard for layout fabrication.
- Use cases

Dr. Mohamed Hassan
Application Development Engineer/
Scientist Keysight Technologies

Mr. Nitin Nigam
Solution Engineer,
Keysight Technologies

Mr. Anil K. Pandey
R&D, Keysight Technologies

Mrs. Renuka Wekhande
Sr. Solutions Engineer-
Pathwave Design Software
Keysight Technologies

Session II- Quantum Optical Simulation

Date: 22nd March 2024, Time: 6 pm- 8 pm

This session will provide hands-on experience with quantum optical simulation software. In this session, different examples of QKD will be discussed and demonstrated throughout the workshop including the transmission of the generated keys over wired or wireless channels. The following topics will be covered during the session: -

- Quantum Circuit Designing
- Quantum Optical Simulation

Dr. Ahmad
VP, Optiwave Systems Inc, Canada

Industry Networking and National Quantum Mission brainstorming on hybrid HPC-QC - 23rd March 2024

Dr. Sourav Chatterjee
Research Engineer,
TCS Research,
Tata Consultancy Services Ltd.

Dr. Gautam Shaw
Director, QKD &
Sensing in Synergy
Quantum India Pvt Ltd

Mr. Animesh Aaryan
TAQBit

Dr. Manish Modani
Nvidia

QBLOX

REGISTRATION

Workshop is open to all students of undergraduate and post-graduate courses, Ph. D. & Post Doc fellows, people in academia, R&D, teaching, consultancy, planning etc., having interest in the fields of workshop themes. Interested participants should fill the registration form available on the following link:

https://cdac.in/index.aspx?id=ev_qc_onlineregister

Open till 15th March 2024 (few seats available)

Registration fee: ₹1000

*Fees are inclusive of GST

The registration fee for the workshop includes workshop kit, dinner, lunch and snacks provided during the sessions.

Fees can also be paid by scanning the QR code.

ACCOMODATION (Closed)

Convenor:

Dr. Anindita Banerjee - Project Manager, C-DAC Pune

Kind Attention:

Mr. Abhir Raj Metkar, Ms. Vethonulu Losu - Quantum Technology, C-DAC Pune

Centre for Development of Advanced Computing (C-DAC), Innovation Park, Panchavati, Pashan, Pune - 411 008, India Tel: +912025503846 (10:00 am to 5:00 pm Email: qccworkshop2024@cdac.in