

TCS Research & Innovation in collaboration with Tata Institute of Fundamental Research, Mumbai**International Quantum Computing Symposium
April 7, 2019 (Co-located with ICPE 2019)****Venue:**

Indian Institute of Technology, Bombay

Objective

The TCS Research & Innovation Quantum Computing Symposium 2019 in collaboration with Tata Institute of Fundamental Research will provide an excellent opportunity to discuss and debate possible answers to some of the fundamental research problems and to identify the most early industry use cases that can be practically implemented using quantum computing. The symposium is expected to bring together experts in classical and quantum algorithms and experts from high performance computing community to engage, exchange views, network and connect. We call for industry participation as well; the plan being:

- Hear from the experts; bring together experts from classical and quantum computing on a common platform and explore different point of views.
- Explain the real state of quantum computing, the motivation and the potential.
- Understand current quantum or hybrid algorithmic challenges, identify opportunities to explore and benchmark white spaces.
- Talk about potential industrial applications that lend themselves to exploiting the power of quantum computing, identify domains.
- TCS anchor the Quantum community in India; build the partner ecosystem.

Agenda

The symposium is being planned as a one-day event co-located with the 10th ACM/SPEC International Conference on Performance Engineering (ICPE 2019), April 7-11, 2019, Mumbai India.

Table 1 Tentative Schedule

April 7, 2019		
Time	Topic	Speaker
8:00 – 9:00	Registration and Tea	
9:00 – 9:15	Welcome	Manoj Nambiar , Head Computing Systems Research TCS
9:15 – 9:30	India QC Effort	Scientific Advisor to PM / Chairman DAE

9:30-9:45	Quantum Computing Initiatives at TIFR	Dr. Sandip Trivedi, Director & Senior professor, TIFR
9:45 – 10:15	Quick Introduction to Quantum Computing for Computer Scientists	Dr. Jaikumar Radhakrishnan, Professor, School of Technology & Computer Science, TIFR
10:15 – 11:00	Challenges in Building and Controlling Quantum Systems. TIFR's 3 Qubit Quantum Machine	Dr. R Vijayraghavan Head, The Quantum Measurement and Control Laboratory (QuMaC), TIFR
11:00 – 11:15	Tea Break	
11:15 – 12:15	Keynote 1	To be finalized
12:15 – 13:15	Keynote 2	To be finalized
13:15 – 14:00	Lunch	
14:00 – 14:45	Quantum Computing - Algorithms	Dr. Jaikumar Radhakrishnan Professor, School of Technology & Computer Science, TIFR
14:45 – 15:00	Quantum Computing – Use Cases; Early Results from TCS	Manoj Nambiar, Head Computing Systems Research TCS
15:00 – 15:15	Tea Break	
15:15 – 16: 45	Panel 1 – Quantum Use Cases	Moderated by Dr. Gautam Shroff, Head, TCS Research
16:45 – 17:00	Tea Break	
17:00 – 18:00	Panel 2 – Quantum Computing systems and Performance	Moderated by Dr. R Vijayraghavan Head, The Quantum Measurement and Control Laboratory, TIFR
18:00 – 18:15	Closing Remarks	Dr. Gautam Shroff, Head, TCS Research

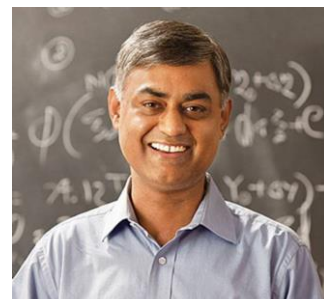
QC Symposium Speakers

Dr. Sandip Trivedi

Director & Senior Professor,
Tata Institute of Fundamental Research

Member, Program Advisory Board,
**International center for Theoretical
Sciences**

Interests: String theory, cosmology and
particle physics



Dr. R Vijayaraghavan

Associate Professor, The Quantum
Measurement and Control Laboratory,
Department of Condensed Matter
Physics and Materials Science
Tata Institute of Fundamental Research

Interests: Quantum phenomena in
superconducting circuits, challenges in
building and controlling quantum
systems



Dr. Jaikumar Radhakrishnan

Professor, School of Technology and Computer Science
Tata Institute of Fundamental Research

Interests: Randomness and Computing, Quantum Information and
Computation, Information Theory, Combinatorics, Discrete
Mathematics



Dr. Prakash Verma

Computational Chemist
1QBit

Interests: Computational Tools, DFT Framework, Quantum Algorithms to accomplish computational chemistry tasks



Dr. Gautam Shroff

VP, Chief Scientist and Head of Research
Member, Corporate Technology Council
Tata Consultancy Services Limited

Interests: Data Analytics, Big Data, Information Fusion, Artificial Intelligence, Software Architecture, Software Engineering, Scientific Computing



Dr. Rahul Jain

Principal Investigator, Centre for Quantum Technologies
and
Associate Professor,
Department of Computer Science
National University of Singapore

Interests: Information Theory, Quantum Computation, Communication Complexity, Complexity Theory, Cryptography



Manoj Nambiar

Principal Scientist and Head, Computing Systems Research
and
Principal Investigator, Quantum Computing
Tata Consultancy Services Limited

Interests: High Performance Computing, Performance Modeling, Automatic Performance Tuning, Quantum Algorithms



Dr. Pranab Sen

Associate Professor, School of Technology and Computer Science
Tata Institute of Fundamental Research

Interests: Quantum Computation, Computational Complexity Theory

