

## About Agra

Agra—the city of the inimitable Taj Mahal—has a heritage and culture that dates back to the Mughal era. Situated on the banks of the river Yamuna, it is home to several world famous Heritage monuments which include the Taj Mahal, Red Fort, Itmad-ud-Daulah and the tomb of Emperor Akbar at Sikandra. The city of Fatehpur Sikri (a UNESCO World Heritage City) is situated 45 kms from Agra. There is an amazing fortified heritage monument on Dayalbagh road commemorating the *Samadh* of Founder-Saint of Radhasoami Faith which is in the final stages of construction. Agra is also famous for its leather goods, handicrafts, zari, zardozi, marble and stone carving, and inlay work. Situated three and a half hour's by road from New Delhi, it is well connected by rail (major stations being Agra Cantt., Agra Fort and Raja Ki Mandi (nearest to Dayalbagh). The weather in Agra in November end is cool (Max. temp. 13°C, Min. temp. 10°C).

## About Dayalbagh Educational Institute

The Dayalbagh Educational Institute is located amidst the tranquil environs of Dayalbagh, a self-contained colony renowned for its serene environment and secular establishments, in which its inhabitants lead an active, disciplined and co-operative community life dedicated to service, conforming to the high spiritual ideals of their faith. On the outskirts of the historic city of Agra, the campus is situated in garden settings, away from the din and noise of the city. Nestled between lush green fields, it provides an excellent ambience and academic setting which is in harmony with nature. This, along with a simple, disciplined and principled life, undoubtedly contributes to the strength of the social, moral and spiritual fiber of the institute's educational system.

## ACCOMMODATION

Limited accommodation is available on request as per requirement on payment basis.

## COLLABORATING INSTITUTIONS

- University of Waterloo, Canada
- Michigan State University, USA
- University of Arizona, USA
- Georgia Institute of Technology, USA
- University of Sao Paulo, Brazil
- Swiss Federal Institute of Technology (ETH), Zurich
- Dayalbagh Educational Institute, Agra, India
- Indian Institute of Technology – Kanpur, India
- Indian Institute of Technology – Delhi, India
- Indian Institute of Technology – Madras, India

## EMERITUS PATRON

**Prof. P. S. Satsangi**

Chairman, Advisory Committee on Education  
Dayalbagh Educational Institutions

## PATRON

**Prof. P.K. Kalra**, Director DEI

## STEERING COMMITTEE

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Dr. Bani Dayal Dhir, DEI, Agra, *Forum Coordinator*  
Dr. Vishal Sahni, DEI, Agra, *Convener*

## ADDRESS FOR CORRESPONDENCE

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## Website

<http://www.dei.ac.in/dei/quantumNano/>

# INTERNATIONAL SCHOOL ON Quantum & Nano Computing Systems and Applications

# QANSAS 2018

NOVEMBER 21 – 24, 2018

(with a Special Forum on Consciousness :  
Integrating Eastern and Western Perspectives on  
November 21, 2018)



## Host Institution

Dayalbagh Educational Institute (Deemed University)  
Dayalbagh, Agra – 282 005  
<http://www.dei.ac.in/dei/quantumNano/>

## Sponsored by

Quantum-Nano Systems Centre  
Research and Technology Park  
Dayalbagh Educational Institute



## Quantum & Nano Computing at DEI

Dayalbagh Educational Institute has embarked on a mission entitled 'Vision 2031' to emerge as one of the topmost Universities in the country in the next two decades. This transformation has spurred the process of establishment of MoUs with several leading national and international institutes like University of Maryland, University of Waterloo, IIT Kanpur, IIT Delhi and TIFR Mumbai to name a few.

Several Indian, American and Canadian campuses have formed a consortium – Quantum and Nano Computing Systems Centre (QANCENTRE) which utilizes the latest distance learning technologies such as videoconferencing, webcasts, e-lectures, online courses for promoting quantum-nano education in India, Canada and US and provides opportunities to young scientists and researchers. One of the activities at the Joint Centre is an annual Winter School where young scientists and researchers get an opportunity to rub shoulders with leading scientists from around the world. The goal of this Winter School is to introduce a general audience of computer scientists, physicists, and mathematicians with little or no background in quantum information processing to the exciting and growing field of quantum information science.

The Schools hosted by DEI have attracted leading international scientists and researchers in the fields of Quantum and Nano Computing like Dr. Charles Bennett, Dr. Lov Grover, Sir Roger Penrose, Prof. Stuart Hameroff, Prof. Vlatko Vedral, Prof. Gilles Brassard, Prof. Richard Jozsa, Prof. Lajos Diosi, Prof. Artur Ekert and Nobel Laureates Prof. Douglas Osheroff and Prof. Robert Richardson (Physics, 1996) among others, in events such as

- Indo-US Shared Vision Workshop on Soft, Quantum and Nano Computing (SQUAN 2007) in February 2007
- Indo-Canadian-American Quantum and Nano Computing Conclave (QANCLAVE 2007) in December 2007
- International School on Quantum and Nano Computing Systems and Applications QANSAS 2008 in December 2008, QANSAS 2009 in December 2009, QANSAS 2010 in December 2010, QANSAS 2011 in December 2011, QANSAS 2012 in November-December 2012, QANSAS 2013 in November-December 2013, QANSAS 2014 in November 2014, QANSAS 2015 in November 2015, QANSAS 2016 in November 2016 and QANSAS 2017 in November 2017

## Scope of the school

The objective of this school is to give a strong background on quantum and nano computing to interested students, scientists and young researchers. The participants are not assumed to have any prior knowledge on the field and could come from computer science, electrical, electronics and mechanical engineering, physics or mathematics. Scientists already familiar with the subject are also welcome, for they will learn something from internationally renowned researchers in the field.

The school involves intense training in the foundations, ramifications, and current frontiers of quantum information science and its physical implementation at the nanoscale. It will cover the entire range of this newly emerged and truly interdisciplinary field, from mathematics over theoretical and experimental physics to computer science. A series of lectures and seminars will cover basic concepts to challenging problems of cutting edge research, along a steep learning curve.



## Special Forum on 'Consciousness : Integrating Eastern and Western Perspectives'

A new addition to the QANSAS series, starting from QANSAS 2012 is the special forum on Consciousness as a pre-school event, to be held on November 21, 2018 with oral presentations and poster session. Many scientists are currently studying what happens in the brain and how the mind relates to the outside world, but quantifying what gives us consciousness is proving to be a challenging task. To attempt an answer to such questions, DEI hosted the Twentieth Conference on Toward a Science of Consciousness (TSC 2013) in March 2013 with experts from all corners of the world and organizes at annual East-West Forum at the TSC series of conferences. QANSAS 2013 included stalwarts in the field including founders of the Penrose-Ham-

eroff Theory, Sir Roger Penrose and Prof. Stuart Hameroff, proponents of Quantum Bayesianism, Prof. Chris Fuchs and Prof. Ruediger Schack and experimentalists including Prof. Anirban Bandyopadhyay. QANSAS 2014 featured renowned researchers including Prof. Leonard Mlodinow, Prof. Mani Lal Bhaumik and Prof. Mark Juergensmeyer. QANSAS 2015 featured stalwarts like Prof. Gyorgy Buzsaki, Prof. Semir Zeki, Prof. Leon Chua, Prof. Anthony Zee, Prof. William Klemm, Prof. Elizabeth Behrman and Prof. Jack Tuszynski. QANSAS 2016 featured Prof. Rafael Yuste, Prof. Craig Hogan, Prof. Ian Underwood and Dr. Joel Wallman. QANSAS 2017 featured stalwarts including Prof. Sir Timothy O'Shea, Prof. Stuart Hameroff, Prof. Peter Roe and Prof. Michael Hudson.

## Panel Discussion

The culmination of QANSAS 2018 will be a Panel Discussion on '**Consciousness, Decoherence and Measurement Problem in Quantum Theory**' with leading experts from quantum information and consciousness from around the world deliberating the various aspects of the problem and possible solutions.

## Registration / Poster Submission

To encourage young students and researchers in the field and provide them a forum to present and discuss their work with the invited speakers, QANSAS 2018 will also feature student posters which will remain on display on all the days of the School. Participants of QANSAS 2018 can send a single paragraph abstract of their Poster by email to '[qansas2018@gmail.com](mailto:qansas2018@gmail.com)' along with the form below.

Name :

Qualification :

Institution :

Please describe your research interests in the field (in about 100 words) :

e-mail :

*Please use individual forms for each author / co-author.*

## Important Dates

**Last date for Poster Abstract submission:**

September 15, 2018 (email to [qansas2018@gmail.com](mailto:qansas2018@gmail.com))

**Notification of Participant List:** September 30, 2018

**Last date for Registration :** October 15, 2018