



CQ_uERE, TCG CREST
Celebrating

“World Quantum Day”

(April 14, 2025)

Speaker:

Prof. Nicolas Gisin

University of Geneva,
Constructor University Bremen,
Constructor Institute of Technology Geneva



Title: Three ways beyond Bell inequalities

Abstract:

The violation of Bell inequalities is arguably the most profound discovery of 20th century science. After the Nobel prize of 2022, the great enterprise, as John Bell used to say, is not over. Here we present 3 ways beyond Bell inequalities:

1. Network non-locality, i.e. non-locality in (quantum) networks with independent sources. In this context no inputs are necessary, opening entirely new aspects of non-locality.
2. Search for hidden influences, i.e. a still possible local explanation of quantum correlations, based on supraluminal influences.
3. Entanglement in joint measurements. Entanglement between subsystems is by now pretty well studied. However, entanglement plays also a crucial role in joint measurements.

 **Date & Time**

14th April 2025 @ 5:00 PM IST

 **Venue**

Classroom-4, TCG CREST

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Organized by:

CQ_uERE (Centre for Quantum Engineering, Research and Education), TCG CREST, Kolkata, INDIA

For more details, please visit the website: <http://www.tcgcrest.org/iyq2025>

For any queries, feel free to contact us through the email: iyq.2025@tcgcrest.org

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(April 14, 2025)

Speaker:
Prof. Bimalendu Deb

Indian Association for the Cultivation of
Science, Kolkata, India



**Title: Quantum Computing in an Ion-Atom
Hybrid Platform**

Abstract:

We propose an ion-atom hybrid system for quantum computing. We demonstrate a two-qubit control phase-gate operation with 97% fidelity between two distant (more than 20-micron separation) neutral atom qubits by leveraging the ion-mediated interaction between the qubits. We discuss possible routes to scaling up the system and the possibility of multi-qubit gate operations.

 **Date & Time**

14th April 2025 @ 3:30 PM IST

 **Venue**

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