

# International Symposium on New Frontiers in Quantum Correlations (ISNFQC18)

A tribute to Professor Satyendra Nath Bose on his 125<sup>th</sup> Birth  
Anniversary

Dates: January 29<sup>th</sup> to February 2<sup>nd</sup>, 2018  
Venue: S. N. Bose National Centre for Basic Sciences,  
Kolkata, India

## Programme Schedule

<b>Monday, 29th January, 2018</b>		
08:30	09:30	Registration
<b>Venue: Silver Jubilee Hall (Live streaming of the programme in Fermion)</b>		
09:30	10:00	Inauguration
<b>10:00</b>	<b>13:00</b>	<b>Session I: Chair: N. Mukunda</b>
10:00	10:10	Special presentation by A. K. Rajagopal
<b>10:10</b>	<b>10:40</b>	<b>TEA BREAK</b>
10:40	11:20	<b>Yuji Hasegawa</b>  <b>Affiliation:</b> Atominstittut, TU-Wien, Vienna, AUSTRIA, Applied Physics, Hokkaido Univ. Sapporo, JAPAN  <b>Title of the Talk:</b> Fundamental Phenomena in Quantum Mechanics studied with Matter-Wave Optical Setups --- Quantum Cheshire-Cat and Revised Uncertainty Relations ---
11:20	12:00	<b>Subhas Chaturvedi</b>  <b>Affiliation:</b> IISER Bhopal  <b>Title of the Talk:</b> Finite time corrections to the efficiencies of heat engines based on quantum Brownian oscillator
12:00	12:30	<b>Arul Lakshminarayan</b>  <b>Affiliation:</b> IIT Madras  <b>Title of the Talk:</b> Lessons from a 3-qubit experiment: from entanglement and thermalization to exact solutions.
12:30	13:00	<b>Bobby Tan Kok Chuan</b>  <b>Affiliation:</b> Seoul National University

		<b>Title of the Talk:</b> Coherence, Quantum Fisher Information, Superradiance and Entanglement are Interconvertible Resources
<b>13:00</b>	<b>14:30</b>	<b>Lunch &amp; Posters</b>
<b>14:30</b>	<b>16:00</b>	<b>Session II: Chair : Partha Ghose</b>
14:30	15:00	<b>Gabriel I. Senno</b>  <b>Affiliation:</b> Quantum Information Theory group, ICFO-The Institute of Photonic Sciences  <b>Title of the Talk:</b> Quantum nonlocality from the perspective of Algorithmic Information Theory
15:00	15:30	<b>A. R. Usha Devi</b>  <b>Affiliation:</b> University of Bangalore, Bangalore, India  <b>Title of the Talk:</b> Pairwise correlation inequalities and joint measurability
15:30	16:00	<b>David Sauerwein</b>  <b>Affiliation:</b> UIBK Austria  <b>Title of the Talk:</b> Multipartite entangled states can almost never be manipulated by LOCC
<b>16:00</b>	<b>16:30</b>	<b>TEA BREAK</b>
<b>16:30</b>	<b>18:10</b>	<b>Session III : Chair: A. K. Rajagopal</b>
16:30	17:10	<b>Dagmar Bruss</b>  <b>Affiliation:</b> H-H-U Duesseldorf  <b>Title of the Talk:</b> Multi-partite entanglement speeds up quantum key distribution in networks
17:10	17:40	<b>Prasanta Panigrahi</b>  <b>Affiliation:</b> Department of Physical Sciences, IISER Kolkata  <b>Title of the Talk:</b> The effect of entanglement and correlations on tripartite two level dipole coupled atoms
17:40	18:10	<b>Aditi Sen De</b>  <b>Affiliation:</b> HRI, Allahabad  <b>Title of the Talk:</b> Frozen quantum correlations
<b>19:30</b>	<b>21:30</b>	<b>Conference Dinner at The Stadel</b>

## Tuesday, 30th January, 2018

Venue: Silver Jubilee Hall (Live streaming of the programme in Fermion)

<b>09:30</b>	<b>10:50</b>	<b>Session IV: P. C. Mahalanobis Memorial Special Session Chair: C. H. Bennett</b>
09:30	10:10	<p><b>Myungshik Kim</b></p> <p><b>Affiliation:</b> QOLS, Blackett Laboratory, Imperial College London, UK</p> <p><b>Title of the Talk:</b> Nonclassicalities in multiphoton correlations</p>
10:10	10:50	<p><b>Dipankar Home</b></p> <p><b>Affiliation:</b> Bose Institute, Kolkata</p> <p><b>Title of the Talk:</b> Probing Quantum Mechanics in the Macroregime using Macrorealist inequality</p>
<b>10:50</b>	<b>11:20</b>	<b>TEA BREAK</b>
<b>11:20</b>	<b>12:50</b>	<b>Session V: Chair: S. M. Roy</b>
11:20	11:50	<p><b>Preeti Parashar</b></p> <p><b>Affiliation:</b> Physics and Applied Mathematics Unit, Indian Statistical Institute, Kolkata</p> <p><b>Title of the Talk:</b> Trace distance measure of coherence</p>
11:50	12:20	<p><b>Alexander Streltsov</b></p> <p><b>Affiliation:</b> Gdansk U Tech. Poland</p> <p><b>Title of the Talk:</b> Entanglement and coherence in distributed quantum networks</p>
12:20	12:50	<p><b>Swapan Rana</b></p> <p><b>Affiliation:</b> ICFO, Spain</p> <p><b>Title of the Talk:</b> Structure of Incoherent Channels</p>
<b>12:50</b>	<b>14:30</b>	<b>Lunch &amp; Posters</b>
<b>14:30</b>	<b>16:05</b>	<b>Session VI: Chair: Prasanta Panigrahi</b>
14:30	15:10	<p><b>Arun Kumar Pati</b></p> <p><b>Affiliation:</b> HRI, Allahabad, India</p> <p><b>Title of the Talk:</b> Preparation Uncertainty Relations Beyond Heisenberg's</p>
15:10	15:40	<p><b>Anirban Pathak</b></p> <p><b>Affiliation:</b> Jaypee Institute of Information Technology, Noida, India</p>

		<b>Title of the Talk:</b> Quantum communication: The requirement, essential resources, new protocols and the effect of noise on them
15:40	16:05	<b>Nirman Ganguly</b>  <b>Affiliation:</b> Department of Mathematics, Heritage Institute of Technology, Kolkata  <b>Title of the Talk:</b> Non-negativity of conditional von Neumann entropy and global unitary operations
16:05	16:30	<b>TEA BREAK</b>

16:30 19:00 Parallel Sessions PI & PII					
Parallel Session PI : Venue: Silver Jubilee Hall Chair : Aurelian Isar			Parallel Session PII : Venue: Fermion Chair: Guruprasad Kar		
16:30	16:55	<b>Anna Okopinska</b>  <b>Affiliation:</b> Institute of Physics, Jan Kochanowski University, Poland  <b>Title of the Talk:</b> Entanglement as a correlation measure in few-body states	16:30	16:55	<b>Manik Banik</b>  <b>Affiliation:</b> Optics & Quantum Information Group, The Institute of Mathematical Sciences, Chennai  <b>Title of the Talk:</b> New family of bound entangled states residing on the boundary of PPT set
16:55	17:15	<b>Rajarshi Pal</b>  <b>Affiliation:</b> Department of Physics, IIT Madras, Chennai  <b>Title of the Talk:</b> Entangling power of time evolution in a many-body system	16:55	17:15	<b>Ashutosh Rai</b>  <b>Affiliation:</b> Quantum Information and Quantum Matter Group, International Institute of Physics, Federal University of Rio Grande do Norte, Brazil  <b>Title of the Talk:</b> Into the Quantum Void: Exploring the corners of the set of quantum correlations
17:15	17:35	<b>Siddhartha Santra</b>  <b>Affiliation:</b> US Army Research Laboratory, Adelphi, MD, USA  <b>Title of the Talk:</b> Optimized swapping schedules for entanglement distribution	17:15	17:35	<b>C. Jebaratnam</b>  <b>Affiliation:</b> SNBNCBS, Kolkata  <b>Title of the Talk:</b> Operational nonclassicality of local multipartite correlations

<b>17:35</b>	<b>18:00</b>	<b>TEA BREAK</b>		<b>17:35</b>	<b>18:00</b>	<b>TEA BREAK</b>
18:00	18:20	<p><b>Nasir Alam</b></p> <p><b>Affiliation:</b> Jaypee Institute of Information Technology, Noida, India</p> <p><b>Title of the Talk:</b> Nonclassical properties of finite dimensional coherent states</p>		18:00	18:20	<p><b>Biswajit Paul</b></p> <p><b>Affiliation:</b> DEPARTMENT OF MATHEMATICS SOUTH MALDA COLLEGE, MALDA</p> <p><b>Title of the Talk:</b> Revealing hidden genuine tripartite non locality</p>
18:20	18:40	<p><b>Sreeraman Muralidharan</b></p> <p><b>Affiliation:</b> US Army research laboratory, Adelphi MD</p> <p><b>Title of the Talk:</b> Quantum repeater architecture using two-species trapped ions</p>		18:20	18:40	<p><b>Avijit Misra</b></p> <p><b>Affiliation:</b> Optics and Quantum Information Group, The Institute of Mathematical Sciences, HBNI, Chennai</p> <p><b>Title of the Talk:</b> Quantum speed limit constraints on a nanoscale autonomous refrigerator</p>
18:40	19:00	<p><b>Arun Sehrawat</b></p> <p><b>Affiliation:</b> Department of Physical Sciences, IISER Mohali,</p> <p><b>Title of the Talk:</b> Quantum constraints stronger than uncertainty relations</p>		18:40	19:00	<p><b>Arup Roy</b></p> <p><b>Affiliation:</b> Physics and Applied Mathematics Unit, Indian Statistical Institute, Kolkata</p> <p><b>Title of the Talk:</b> Bayesian Games, Social Welfare Solutions and Quantum Entanglement</p>

# Wednesday, 31<sup>st</sup> January, 2018

Venue: Silver Jubilee Hall (Live streaming of the programme in Fermion)		
<b>09:30</b>	<b>11:05</b>	<b>Session VII: Chair: Anil Kumar</b>
09:30	10:10	<b>Shasanka Mohan Roy</b>  <b>Affiliation:</b> Homi Bhabha Institute, Mumbai  <b>Title of the Talk:</b> Rigorous quantum limits on monitoring free masses and harmonic oscillators
10:10	10:40	<b>Alessio Avella</b>  <b>Affiliation:</b> Istituto Nazionale di Ricerca Metrologica, Torino, Italy  <b>Title of the Talk:</b> Violation of a Leggett-Garg Inequality Exploiting Anomalous Weak Values
10:40	11:05	<b>Tabish Qureshi</b>  <b>Affiliation:</b> Centre for Theoretical Physics, J.M.I., Delhi  <b>Title of the Talk:</b> Wave-particle duality in n-path interference
<b>11:05</b>	<b>11:30</b>	<b>TEA BREAK</b>
<b>11:30</b>	<b>12:30</b>	<b>Session VIII: Chair: Apoorva Patel</b>
11:30	12:05	<b>Sibasish Ghosh</b>  <b>Affiliation:</b> IMSC Chennai, India  <b>Title of the Talk:</b> Quantum heat engine using energy quantization in potential barrier
12:05	12:30	<b>Anand Jha</b>  <b>Affiliation:</b> Assistant Professor, Department of Physics IIT Kanpur, Kanpur, UP, India  <b>Title of the Talk:</b> Efficient measurement of high-dimensional quantum states
<b>12:30</b>	<b>14:30</b>	<b>Lunch &amp; Posters</b>
<b>14:30</b>	<b>22:00</b>	<b>Buses to depart for Boat Trip followed by Dinner at Floatel</b>

# Thursday, 1<sup>st</sup> February, 2018

Venue: Silver Jubilee Hall (Live streaming of the programme in Fermion)		
<b>09:30</b>	<b>11:05</b>	<b>Session IX: Chair: Myungshik Kim</b>
09:30	10:05	<b>Cyril Branciard</b>  <b>Affiliation:</b> Institut NEEL CNRS  <b>Title of the Talk:</b> Quantum processes and correlations with no definite causal order
10:05	10:35	<b>Subhasish Banerjee</b>  <b>Affiliation:</b> IIT Jodhpur  <b>Title of the Talk:</b> Open Quantum Systems and Quantum Information in Relativistic and Sub-atomic Systems
10:35	11:05	<b>R. Srikanth</b>  <b>Affiliation:</b> Dept. of Theoretical Sciences, Poornaprajna Institute of Scientific Research, Bangalore  <b>Title of the Talk:</b> Maximally nonlocal subspaces
<b>11:05</b>	<b>11:30</b>	<b>TEA BREAK</b>
<b>11:30</b>	<b>13:00</b>	<b>Session X: Chair: Subhas Chaturvedi</b>
11:30	12:05	<b>Sougato Bose</b>  <b>Affiliation:</b> University College, London  <b>Title of the Talk:</b> From macroscopic superpositions to quantum gravity
12:05	12:35	<b>Asoka Biswas</b>  <b>Affiliation:</b> Department of Physics, IIT Ropar, India  <b>Title of the Talk:</b> Quantum Thermal Machines with Trapped Ions
12:35	13:00	<b>Ramij Rahaman</b>  <b>Affiliation:</b> Department of Mathematics, University of Allahabad, India  <b>Title of the Talk:</b> Device-independent self-test of true multipartite entanglement
<b>13:00</b>	<b>14:30</b>	<b>Lunch &amp; Posters</b>
<b>14:30</b>	<b>16:00</b>	<b>Session XI: Chair : Yuji Hasegawa</b>
14:30	15:00	<b>Apoorva Patel</b>  <b>Affiliation:</b> IISC, Bangalore, India  <b>Title of the Talk:</b> Quantum trajectories for measurement of entangled states
15:00	15:30	<b>Urbasi Sinha</b>

		<p><b>Affiliation:</b> Raman Research Institute, Sadashivanagar, Bangalore, India</p> <p><b>Title of the Talk:</b> Observing and tuning the effect of Feynman paths in a classical regime</p>
15:30	16:00	<p><b>Animesh Datta</b></p> <p><b>Affiliation:</b> University of Warwick</p> <p><b>Title of the Talk:</b> Quantumness from ultrafast spectroscopy experiments</p>
16:00	16:30	<b>TEA BREAK</b>

16:30		18:40		Parallel Sessions PIII & PIV			
Parallel Session PIII : Venue: Silver Jubilee Hall Chair : Anna Okopinska				Parallel Session PIV : Venue: Fermion Chair: Debasis Sarkar			
16:30	16:55	<p><b>Aurelian Isar</b></p> <p><b>Affiliation:</b> Department of Theoretical Physics, National Institute of Physics and Nuclear Engineering, Bucharest-Magurele, Romania</p> <p><b>Title of the Talk:</b> GENERATION OF QUANTUM CORRELATIONS BETWEEN TWO BOSONIC MODES IN A THERMAL ENVIRONMENT</p>	16:30	16:55	<p><b>Prabha Mandayam</b></p> <p><b>Affiliation:</b> Department of Physics, Indian Institute of Technology Madras, Chennai, India</p> <p><b>Title of the Talk:</b> Role of quantum error correction in preserving entanglement</p>		
16:55	17:15	<p><b>Anindita Banerjee</b></p> <p><b>Affiliation:</b> QuNu Labs Pvt. Ltd., Bangalore, India</p> <p><b>Title of the Talk:</b> Demonstration of DPS QKD with single photon interference of a weak coherent pulse in telecommunication wavelength with APD detectors</p>	16:55	17:15	<p><b>Samyadeb Bhattacharya</b></p> <p><b>Affiliation:</b> SNBNCBS, Kolkata</p> <p><b>Title of the Talk:</b> Universal quantum uncertainty relations between non-ergodicity and loss of information</p>		
17:15	17:35	<p><b>George Thomas</b></p> <p><b>Affiliation:</b> Optics and</p>	17:15	17:35	<p><b>Shashi Prabhakar</b></p> <p><b>Affiliation:</b> School of</p>		



		Quantum Information Group, The Institute of Mathematical Sciences, Chennai  <b>Title of the Talk:</b> Thermodynamics of non-Markovian reservoirs and heat engines			Physics, University of the Witwatersrand, South Africa CSIR National Laser Centre, South Africa  <b>Title of the Talk:</b> Hong-Ou-Mandel interference in turbulence using OAM entangled photon pair
17:35	17:55	<b>Shruti Dogra</b>  <b>Affiliation:</b> Indian Institute of Technology Madras, Chennai  <b>Title of the Talk:</b> Superposing pure quantum states with partial prior information	17:35	17:55	<b>Amit Mukherjee</b>  <b>Affiliation:</b> ISI, Kolkata  <b>Title of the Talk:</b> EXCLUSIVITY PRINCIPLE AND UNPHYSICALITY OF GARG-MERMIN CORRELATION
<b>17:55</b>	<b>18:25</b>	<b>TEA BREAK</b>	<b>17:55</b>	<b>18:25</b>	<b>TEA BREAK</b>

<b>18:30</b>	<b>19:00</b>	<b>Screening of documentary film, "Satyendranath Bose: An Iconic Genius"</b> <b>Venue: Silver Jubilee Hall</b>
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# Friday, 2<sup>nd</sup> February, 2018

Venue: Silver Jubilee Hall (Live streaming of the programme in Fermion)		
09:30	10:40	<b>Session XII: Special Session BOSE-125 Distinguished Lecture: Chair: Samit Kumar Ray</b>
09:30	09:40	<b>Samit Kumar Ray</b>  <b>Director , SNBNCBS, Kolkata</b>
09:40	10:40	<b>Charles Bennett</b>  <b>Affiliation:</b> IBM Watson, New York  <b>Title of the Talk:</b> Forging the culture of quantum information science
10:40	11:10	<b>TEA BREAK</b>
11:10	12:55	<b>Session XIII: Chair: Bruss Dagmar</b>
11:10	11:40	<b>Adam Sawicki</b>  <b>Affiliation:</b> CTP Polish Academy of Sciences  <b>Title of the Talk:</b> n-Particle Quantum Statistics on Graphs
11:40	12:05	<b>C. M. Chandrasekhar</b>  <b>Affiliation:</b> IMSc Chennai  <b>Title of the Talk:</b> Entangling power of accelerated quantum walks
12:05	12:30	<b>Alok Pan</b>  <b>Affiliation:</b> National Institute of Technology Patna, Ashok Rajhpath, Patna, India  <b>Title of the Talk:</b> Optimal quantum preparation contextuality in n-bit parity-oblivious multiplexing task
12:30	12:55	<b>Satyabrata Adhikari</b>  <b>Affiliation:</b> Delhi Technological University, India  <b>Title of the Talk:</b> Application of Structural Physical Approximation (SPA) of Partial Transpose state in Teleportation
12:55	14:30	<b>Lunch &amp; Posters</b>
14:30	16:00	<b>Session XIV: Chair : Cyril Branciard</b>
14:30	15:00	<b>Anil Shaji</b>  <b>Affiliation:</b> School of Physics, IISER Thiruvananthapuram  <b>Title of the Talk:</b> Non Classical Correlations in Open Quantum Dynamics
15:00	15:25	<b>Ramandeep S. Johal</b>  <b>Affiliation:</b> Department of Physical Sciences, Indian Institute

		<p>of Science Education and Research (IISER) Mohali, India</p> <p><b>Title of the Talk:</b> Efficiency at optimal performance in quantum and mesoscopic heat engines with prior information</p>
15:30	16:00	<p><b>Gerardo Adesso</b></p> <p><b>Affiliation:</b> School of Mathematical Sciences, University of Nottingham</p> <p><b>Title of the Talk:</b> Optimal continuous variable quantum teleportation with limited resources</p>
<b>16:00</b>	<b>16:30</b>	<b>TEA BREAK</b>
<b>16:30</b>	<b>18:00</b>	<b>Session XV: Chair: Home Dipankar</b>
16:30	17:00	<p><b>Somshubhro Bandyopadhyay</b></p> <p><b>Affiliation:</b> Bose Institute</p> <p><b>Title of the Talk:</b> Sharing entanglement via noisy quantum channels: One-shot optimal singlet fraction and entanglement negativity</p>
17:00	17:30	<p><b>Pankaj Agrawal</b></p> <p><b>Affiliation:</b> Insitute of Physics Bhubaneswar</p> <p><b>Title of the Talk:</b> Nonlocality and Multiqubit States</p>
17:30	17:55	<p><b>Sandeep Goyal</b></p> <p><b>Affiliation:</b> IISER, Mohali, India</p> <p><b>Title of the Talk:</b> An almost convincing scheme for discriminating the preparation basis of quantum ensemble and why it will not work</p>
<b>17:55</b>	<b>18:00</b>	<b>Best presentation awards &amp; Closure of Symposium</b>