

Seminar

Unbounded Sequential Sharing of Quantum Correlations and Advantages

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This talk is based on two recent works: Phys. Rev. Lett. 133, 170201 (2024) and arXiv:2605.16093. We investigate how incompatible measurements can be optimally tailored to minimise state disturbance while preserving the quantum resources required for nonclassical information-processing tasks. By carefully controlling the measurement-induced evolution of the shared state, it is possible to confine the post-measurement states within a resourceful region of the state space.

This approach enables an unbounded sequence of independent observers to sequentially access and exploit quantum correlations. Specifically, we demonstrate that an unbounded number of copies of one observer can achieve a violation of the Bell-CHSH inequality (Phys. Rev. Lett. 133, 170201 (2024)), and more recently, an unbounded number of receivers can obtain a quantum advantage in a communication task (arXiv:2605.16093). These results reveal a powerful interplay between measurement incompatibility, state disturbance, and the persistence of quantum resources in sequential quantum networks.

Thursday, Aug 20th 2026

16:00 Hrs (Tea / Coffee 15:45 Hrs)

Seminar Hall, TIFRH