Tata Institute of Fundamental Research
Survey No. 36/P, Gopanpally Village, Serilingampally, Ranga Reddy Dist., Hyderabad – 500 046

Internal Webinar

Role of Quantum Discord in Mixed State Quantum Computing

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Identifying the quantum resources that enable exponential speedup in quantum computing is one of the biggest challenges in the field. Entanglement is already proven to be a necessary resource for speedup in pure state quantum computing. However, for mixed state quantum computing, a comprehensive understanding of the resources that enable exponential speedup is still missing. In this talk, I will present my work exploring the role of the bipartite quantum resource measure, quantum discord, in the DQC1 mixed state quantum algorithm. I will extend my discussion of quantum discord to its presence in subsystems of Matrix Product states and relate it to a different quantum resource known as non-stabilizerness. I will also briefly talk about my work on the Non-completely positive dynamical maps of accelerating detectors.

Friday, Jul 3rd 2026

11:30 Hrs