



Seminar/Talk

Quantum computing with qubits encoded in oscillators

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Host: Johannes Fink

By encoding a logical qubit in the infinitely large Hilbert space of a quantum oscillator it might be possible to realize a more hardware efficient approach to quantum computing. Recent experiments have reached the so-called break-even point for error correction using this idea, where an encoded qubit has a longer life-time than an unencoded qubit. However, fault-tolerant schemes for these encodings have been missing. Without fault-tolerance, it is probably not possible to go much beyond break even. In this talk I will present ongoing theoretical work on a practical and fault-tolerant scheme for a large family of oscillator codes. Although our results do not provide any free lunch, they suggest that highly hardware efficient and fault-tolerant error correction is possible. We are also able to numerically compute fault-tolerance (pseudo) thresholds for codes in this family, including Cat- and Binomial codes, for the first time.

Monday, August 6, 2018 11:00am - 12:00pm

Big Seminar room Ground floor / Office Bldg West (I21.EG.101)



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.

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