Quantum simulators: from the Fermi Hubbard model to quantum assisted NMR inference

> APERO after the colloquium

Prof. Eugene Demler ETHZ

> Monday March 21 16:15 Room CE 4

I will discuss recent progress of the optical lattice emulators of the Fermi Hubbard model. The new feature of these experiments is availability of snapshots of many-body states with single particle resolution. I will review new insights from these experiments on properties of doped the Mott insulators, including demonstration of magnetically mediated pairing. I will also present the idea of using quantum simulators to perform inference of NMR spectra for biological molecules. I will review recent experimental realization of this algorithm on a quantum computer using trapped ions. Prospects for scaling this approach to solving practically relevant problems will be discussed.

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