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FABIAN GRUSDT 'Quantum simulation frontier: From Strongly Correlated Fermions to Lattice Gauge Theories'

April 24, 2020

Seminar, April 24, 2020, 12:00. Online

FABIAN GRUSDT

Ludwig-Maximilians-Universitat München (LMU)

Quantum simulations with ultracold atoms provide an unprecedented microscopic perspective on strongly correlated quantum matter. In the Fermi-Hubbard model, believed to underly high-Tc superconductivity, this allows to revisit a decades-old idea that strongly interacting electrons may fractionalize into partons - loosely speaking, the analogues of quarks in high-energy physics - called spinons and chargons. In this talk I will discuss current experimental results supporting this idea; I will review our refined theoretical understanding as of today, and propose new ways to directly visualize the emergent constituents. In the second part of the talk, I will approach the problem from a different angle and discuss Z2 lattice gauge theories coupled to dynamical matter fields. On one hand, these systems can describe some of the exotic physics expected in the FermiHubbard model at low doping. On the other hand, recent progress in the quantum simulation of lattice gauge theories allows to study them in their own right.

Link to Join in: http://s.ic.fo/FabianGrusdt240420

Instructions for joining Webinar: All interested may join this seminar. Participants will be asked to register upon entry. Enter with video and microphone in "off".

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Friday, April 24, 2020, 12:00. Online

Hosted by Prof. Leticia Tarruell and Prof. Maciej Lewenstein