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Physics Colloquium

Tuesday, June 11, 2024 at 16:30

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Fragmented superconductivity and fluctuating stripes in strongly correlated electrons

Many of the most enigmatic states of matter emerge whenever interactions between particles are strong, especially in quantum mechanics. The physics when tuning the ratio between kinetic and interaction energy of electrons in a solid is described by the so-called Hubbard model. Despite its minimalistic formulation, it captures key aspects of unconventional superconductors, recent moiré materials, and many quantum spin liquid candidates. Recent years have seen exciting progress in our understanding of this paradigmatic model due to modern numerical and analytical approaches. In this talk, I will focus on two of our recent findings achieved using tensor network methods. I demonstrate how stripe order observed in cuprate superconductors melts and forms extended charge clusters at intermediate temperatures. Thereafter, we discuss a state where a charge density wave and superconductivity coexist. Remarkably, this then leads to a "fragmentation" of the superconducting condensate.



Venue: **small lecture hall**. Universität Leipzig, Faculty of Physics and Earth Sciences 04103 Leipzig, Linnéstraße 5.

Everyone is welcome to a reception with coffee, drinks and cookies in the Aula following the talk.

For an up-to-date semester program, sign-up for the physics colloquium mailing list, and subscription to the digital calendars in CalDAV format, head to the colloquiums web page <https://www.physes.uni-leipzig.de/fakultaet/veranstaltungen>

