



Colloquium on Solid-State Physics



Department of Physics
WS 2022/2023

special date:

Wednesday, 15th February 2023, 17.15 h
Lecture Hall II, Department of Physics, Garching

**Twists and turns of superconductivity from
a repulsive interaction**

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Abstract:

In my talk, I review recent and not so recent works aiming to understand whether a nominally repulsive Coulomb interaction can give rise to superconductivity. I discuss a generic scenario of the pairing, put forward by Kohn and Luttinger back in 1965, and briefly review modern studies of the electronic mechanisms of superconductivity in the lattice systems, which model cuprates, Fe-based superconductors, and even doped graphene. I show that the pairing in all three classes of materials can be viewed as a lattice version of Kohn-Luttinger physics, despite that the pairing symmetries are different. I discuss under what condition the pairing occurs and rationalize the need to do renormalization-group studies. I also discuss most recent work on the pairing near a quantum-critical point, particularly the interplay between superconductivity and non-Fermi liquid physics.

There will be coffee, tea, and cookies in front of the lecture hall at 17.00 h

gez:

Christian Pfeleiderer (Host)



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