



Contribution ID: 248

Type: Talk

【141】 New perspective on unconventional superconductivity, strange metallicity, and fractional quantum Hall effect from quantum geometry

Thursday 30 June 2022 16:45 (30 minutes)

A few years ago [1], it was proposed that materials hosting narrow topological bands can support nontrivial superfluid weight, with T_c beyond the conventional BCS limits. This behavior roots to the large spread of electronic orbitals in topological bands, which is linked to properties of quantum metrics associated with electronic Bloch states [2,3]. We present a new perspective for quantum transport in flat band materials, adding strange metallicity, anomalous Hall conductance, fractional quantum Hall effect, thermoelectricity, and quantum noise, —to a common denominator from the quantum-geometric point of view.

[1] S. Peotta, P. Törmä, *Nature Commun.* 6, 8944 (2015). [2] N. Marzari, D. Vanderbilt, *Phys. Rev. B* 56, 12847 (1997). [3] A. Kruchkov, *Phys. Rev. B* 105, L241102 (2022).

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Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics (KOND)