



Contribution ID: 7

Type: Talk

【122】 Time-reversal symmetry-breaking charge order in a kagome superconductor

Wednesday, 29 June 2022 15:00 (15 minutes)

The kagome lattice, the most prominent structural motif in quantum physics, benefits from inherent nontrivial geometry to host diverse quantum phases. We utilized muon-spin relaxation to probe charge order and superconductivity in kagome superconductors $(\text{K,Rb})\text{V}_3\text{Sb}_5$ [1]. We observe a striking enhancement of the internal field width sensed by the muon ensemble, which takes place just below the charge ordering temperature. We further show a multigap and nodal [2] superconductivity in $(\text{K,Rb})\text{V}_3\text{Sb}_5$. Our results point to time-reversal symmetry-breaking charge order intertwining with unconventional superconductivity in the correlated kagome lattice, offering unique insights into the pairing mechanism.

[1] C. Mielke III et al., and Z. Guguchia, *Nature* 602, 245-250(2022).

[2] Z. Guguchia et al., arXiv:2202.07713v1(2022).

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Session Classification: Condensed Matter Physics

Track Classification: Condensed Matter Physics (KOND)