



Contribution ID: 108

Type: **Poster Presentation**

Quadrupolar Level Crossing Resonance in Kagome Metals AV_3Sb_5

AV_3Sb_5 ($A = K, Cs, \text{and } Rb$) V-based kagome metals have attracted significant attention owing to the intricate interplay between electronic correlations and nontrivial band topology, including features such as flat bands and van Hove singularities [1,2]. These systems host intertwined electronic instabilities [3], leading to a complex phase diagram between the charge density wave (T_{CDW}) and superconducting transition (T_C).

In this talk, I will present our recent investigation of these compounds using quadrupolar level crossing resonance (QLCR)[4]. We observed a subtle change around T_{CDW} , while a significant shift in the resonance frequency and its depth is observed at a temperature between T_{CDW} and T_C [5]. This is associated with a rearrangement of the charge density and the possibility of significant charge fluctuations within the CDW state. These findings agree with previous μ SR, NMR and STM spectroscopy results, showing a complex electronic phase diagram in V-based kagome systems [2,3].

References:

- [1] B. R. Ortiz, et al. PRL v125,247002 (2020); B. R. Ortiz, et al. PRM 5,034801 (2021); S. D. Wilson et al. Nat. Rev. Mats 9, 420 (2024).
- [2] R. Khasanov et al. PRR 4 023244 (2022); Z. Guguchia et al. Nat. Comm. 14, 153 (2023); C. Mielke et al. Nature 602, 245 (2022).
- [3] Y. Xu, et al. Nat. Phys. 18 1470 (2022); L. Zheng, Nat. 611,7937 (2024).
- [4] R. Kadono, et al. J. Phys. Soc. Jpn. 69, 3189 (2000).
- [5] P. Bonfà, et al. arXiv:2411.04848v1 (2024).

Email

anshu.kataria@unipr.it

Funding Agency

Supervisors Name

Supervisors Email

Did you request an Invitation Letter for a Visitors Visa Application

No

Primary authors: Dr KATARIA, Anshu (Dipartimento di Scienze Matematiche, Fisiche e Informatiche, Università di Parma, I-43124 Parma, Italy); Dr BONFA, Pietro (Dipartimento di Fisica, Informatica e Matematica, Università di Modena e Reggio Emilia, Via Campi 213/a, 41125 Modena, Italy)

Co-authors: Dr CAPA SALINAS, Andrea (Materials Department, University of California Santa Barbara, Santa Barbara, California 93106, USA); Mr VALENTI, Diego (Dipartimento di Scienze Matematiche, Fisiche e Informatiche, Università di Parma, I-43124 Parma, Italy); Dr PRATT, Francis (ISIS Pulsed Neutron and Muon Source, Rutherford Appleton Laboratory, Didcot OX11 0QX, U.K.); Dr JOHN ONUORAH, Ifeanyi (Dipartimento di Scienze Matematiche, Fisiche e Informatiche, Università di Parma, I-43124 Parma, Italy); Dr J.BAKER, Peter (ISIS Pulsed Neutron and Muon Source, Rutherford Appleton Laboratory, Didcot OX11 0QX, U.K.); Dr SANNA, Samuele (Dipartimento di Fisica e Astronomia “A. Righi”, Università di Bologna, I-40127 Bologna, Italy); Dr COTTRELL, Stephen (ISIS Pulsed Neutron and Muon Source, Rutherford Appleton Laboratory, Didcot OX11 0QX, U.K.); Prof. D. WILSON, Stephen (Materials Department, University of California Santa Barbara, Santa Barbara, California 93106, USA); GUGUCHIA, Zurab (PSI Center for Neutron and Muon Sciences CNM, 5232 Villigen PSI, Switzerland)

Presenter: Dr KATARIA, Anshu (Dipartimento di Scienze Matematiche, Fisiche e Informatiche, Università di Parma, I-43124 Parma, Italy)

Session Classification: Poster session 2

Track Classification: Magnetism