

CONDENSED MATTER SCIENCES SEMINAR

Professor Samuele Sanna

University of Bologna

Host

Dr Rong Cong

Title

The fascinating cascade of quantum phase transitions in novel 2D Kagome superconductors as observed by local probes

Friday, May 24th, 2024

1st Floor – B101

15:00-16:00

Abstract

Quantum materials are governed by many-body interactions which give rise to fascinating emergent quanta phenomena. Among these materials, the novel quasi-two-dimensional AV_3Sb_5 (A= K, Cs, Rb) Kagome superconductors have recently attracted a strong attention. Their non-trivial band topology gives rise to high electronic instabilities yielding to several symmetry breaking phenomena, such as charge ordering, possible orbital magnetism and time reversal symmetry breaking and unconventional superconductivity. Here I will present recent results on the study of the *symmetry breaking cascade* found in these novel topological V-based Kagome superconductors [1,2] by using the combined power of muon and nuclear spectroscopies.

[1] J. Frassinetti et al., Phys. Rev. Research 5, L012017 (2023)

[2] J.N. Graham, et al. arXiv:2402.11130 (2024)

Bio

Samuele Sanna is Associate Professor and Director of the Master Degree School in Physics at the University of Bologna in Italy. He teaches courses on condensed matter, magnetism, superconductivity and quantum technologies. He is an experimental physicist and studies quantum materials properties using mainly muon spectroscopy and nuclear magnetic resonance.

