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MMQ03: Exploring Strongly Correlated Electron Systems with Large-Scale Facilities

Organizers: Victor Balédent (LPS), Fabienne Duc (LNCMI)

Invited Speakers: Jean-Pascal Rueff (Synchrotron SOLEIL), Manila Songvilay (Institut Néel)

Content:

Large-scale research facilities play a central role in advancing our understanding of quantum materials, particularly systems characterized by strong electronic correlations. These facilities provide both cutting-edge experimental techniques and access to extreme sample environments that are essential for revealing emergent phenomena in complex materials.

X-ray and neutron scattering techniques are especially powerful for probing the collective behavior arising from electronic correlations and for identifying novel quantum states. By enabling systematic exploration of phase diagrams under external parameters, such as low temperature, pressure, electric and magnetic fields, and uniaxial strain, these methods offer unique insights into the fundamental mechanism governing correlated electron systems.

This mini-symposium is therefore dedicated to highlighting the contributions of large-scale research infrastructures, such as synchrotron, and X-ray free-electron laser (XFEL) sources, as well as neutron facilities, to the study of strongly correlated electron materials. Topics of interest include, but are not limited to, quantum spin liquids, superconductivity, multiferroicity, altermagnetism, topological phenomena, and related emergent states.