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## MMQ06 : New developments in cuprate and nickelate high-T<sub>c</sub> superconductors

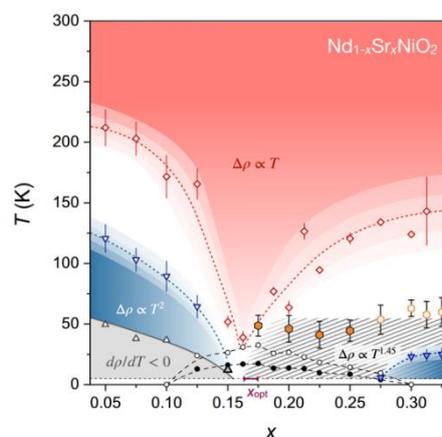
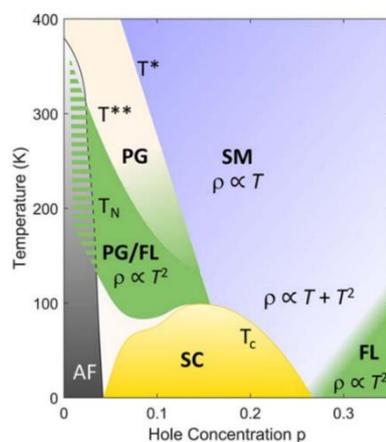
**Organizers:** Siham Benhabib (LPS, Paris), Caitlin Duffy (LNCMI, Toulouse)

**Invited Speakers:** Lucía Iglesias Bernardo (Thales) and Dalila Bounoua (CEA)

Owing to strong electronic correlations, high-T<sub>c</sub> superconductors such as cuprates, nickelates, and iron-based superconductors exhibit a rich landscape of exotic phenomena. Their ability to host unconventional superconductivity in layered structures makes them a paradigmatic platform for strongly correlated quantum matter. Yet, despite decades of intense investigation, the underlying pairing mechanism remains among the most profound and enduring mysteries in modern condensed matter physics. Despite their fundamental differences, these systems display a striking convergence of key phenomena, including a high-T<sub>c</sub> superconducting dome, non-Fermi-liquid behaviour, intertwined spin and charge orders, and the possible emergence of quantum criticality. The interplay of these features constitutes a complex challenge for both theorists and experimentalists, while advances in their understanding carry broad implications across a wide class of correlated materials.

This mini-colloque focuses on recent advances in cuprate and nickelate high T<sub>c</sub> superconductors, covering topics such as:

- Strange metal and quantum critical behaviour
- Competing orders (magnetic, charge)
- Electronic structures and scattering
- Tuneable superconductivity
- material synthesis



Phase diagrams of (left) cuprates (Barišić 2019 *New J. Phys.* **21** 113007) and (right) nickelates (Hsu. *Nat. Commun.* **15**, 9863 (2024))