18èmes Journées de la Matière Condensée
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Société Française de Physique

Titre : « The new world of nickelate superconductors »

1. **Organisateurs (avec affiliation, usuellement 2 ou 3 personnes) :**

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2. **Parrainage ou lien avec des sociétés savantes, des GDR ou autres structures :**

GdR MEETICC

3. **Résumé de la thématique du minicolloque :**

Layered nickelates have long been discussed as candidate materials for cuprate-like high-Tc superconductivity. This speculation recently became reality in 2019 when unconventional superconductivity was discovered in hole-doped nickelate thin films [1]. This has sparked a massive research interest embracing both theory and experiments on these systems in the condensed matter community [2]. The mini-colloque « The new world of nickelate superconductors » aims at gathering the young French community that is now actively working on this topic. Thus, different important aspects of this cross-disciplinary research will be covered. These aspects range from materials synthesis (bulk and thin-films) to advanced characterization techniques and theory.

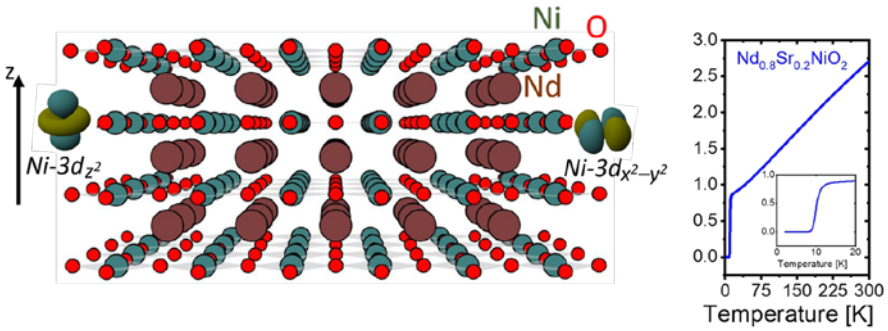

Figure 1 *(Left) Sketch of the infinite-layer structure of the superconducting nickelates and the Ni-3de$_g$ orbitals. The c-axis is oriented along the z-direction. (Right) Temperature dependence of the resistivity for a Sr-doped $NdNiO_2$ infinite-layer thin film with superconducting onset ~ 15 K. In addition to superconductivity, charge-density-wave instabilities have recently been disclosed in these systems [see e.g. G. Krieger et al. Charge and spin dichotomy in $NdNiO_2$ driven by $SrTiO_3$ capping layer, arXiv:2112.03341].*

Références

[1] D. Li et al., *Superconductivity in an infinite-layer nickelate*, Nature 572, 624–627 (2019).
[2] A. Botana, F. Bernardini, A. Cano, *Nickelate superconductors: an ongoing dialog between theory and experiments,* JETP 159, 711 (2021); arXiv:2012.02764