

Spin and charge excitations in doped cuprates

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Interplay of spin and charge degrees of freedom in their electronic properties is one of the characteristics of strongly correlated electron systems. Cuprate superconductor is a suitable material for the study of spin and charge excitations, because it has a relatively simple electronic structure where only a few orbitals are relevant and both hole and electrons can be doped to the Mott insulating state. Comprehensive investigation of the spin and charge excitations is important for the understanding of the strong correlation effect and the superconductivity.

In my presentation, I will show observation of spin and charge excitations in doped cuprates by using multiple inelastic-scattering techniques (Cu L₃-edge RIXS, Cu K-edge RIXS, and inelastic neutron scattering) to cover wide energy-momentum space [1, 2] and discuss similarity and difference of the excitations between the electron- and hole-doped cuprates.

References

- [1] K. Ishii et al., Nat. Commun. **5**, 3714 (2014).
- [2] S. Wakimoto, K. Ishii et al., Phys. Rev. B **91**, 184513 (2015).

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