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Probing condensates' coherence by time-resolved ARPES: From superconductors to excitonic insulators

With its direct correspondence to the electronic structure, angle-resolved photoemission spectroscopy (ARPES) is a ubiquitous tool for the study of quantum materials. When extended to the temporal domain, time-resolved ARPES offers the potential to move beyond equilibrium properties, exploring both the unoccupied electronic structure as well as its dynamical response under ultrafast perturbation [1]. In this talk, I will discuss how time-resolved ARPES can probe the coherence of many-body condensates, from high-temperature superconductivity [2,3], to spin-correlation-driven pseudogap [4], and excitonic insulating behavior [5].

- [1] F. Boschini, M. Zonno, A. Damascelli, *Rev. Mod. Phys.* 96, 015003 (2024).
- [2] F. Boschini et al., *Nature Materials* 17, 416 (2018).
- [3] M. Zonno, F. Boschini, A. Damascelli, *JESRP* 251, 147091 (2021).
- [4] F. Boschini et al., *npj Quantum Materials* 5, 6 (2020).
- [5] D. Golez et al., *Phys. Rev. B* 106, L121106 (2022).

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