

Systematic angle-resolved photoemission study of Ce-based heavy-fermion systems

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We present the systematic angle-resolved photoemission (ARPES) studies of Ce-based heavy fermion compounds, $\text{CeNi}_{1-x}\text{Co}_x\text{Ge}_2$, whose ground states are change from antiferromagnetic to non-magnetic heavy fermion via quantum critical point (QCP). Recently, it was clearly observed that the Kondo resonance (KR) peaks (Ce $4f^1$ state) are dispersed from above the Fermi-level (E_F) and cross E_F forming the diamond-shaped Fermi-surface (FS) in non-magnetic heavy-fermion system, $\text{CeCoGe}_{0.8}\text{Si}_{1.2}$ [1]. The systematic Ce $4d$ - $4f$ resonant ARPES studies of $\text{CeNi}_{1-x}\text{Co}_x\text{Ge}_2$ reveal that such momentum-dependence of KR peaks exists across QCP, indicating the itinerant character of f -electrons in agreement with the results of angle-integrated photoelectron spectroscopy [2].

References:

- [1] H. J. Im et al., Phys. Rev. Lett. **100**, 176402 (2008).
- [2] H. J. Im et al., Phys. Rev. B **72**, 220405 (2005).