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Distinct Fermi Surface Topology and nearly Isotropic Superconducting Gap in $A_xFe_{2-y}Se_2$ (A=K, Tl, Rb) and Single-layer FeSe Superconductors

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High resolution angle-resolved photoemission measurements have been carried out to study the electronic structure and superconducting gap of the newly discovered $A_xFe_{2-y}Se_2$ [A = K, (Tl,K) and (Tl,Rb)] superconductors[1,2,3] and single-layer FeSe superconductor grown on $SrTiO_3$ substrate[4]. Distinct Fermi surface topology and nearly isotropic superconducting gap without nodes are observed in these systems. The implications of these results on the superconductivity mechanism of the iron-based superconductors will be discussed.

References:

[1] D. X. Mou, X. J. Zhou *et. al*, Phys. Rev. Lett. **106**, 107001 (2011).
[2] L. Zhao, X. J. Zhou *et. al*, Phys. Rev. B **83**, 140508(R) (2011).
[3] D. X. Mou, L. Zhao and X. J. Zhou, Frontier of Physics **6**, 410 (2011)
[4] D. F. Liu , X. J. Zhou et al., arXiv: 1202.5849, Nature Communications, in press.