

## Orbital character of electron bands in $A_x\text{Fe}_{2-y}\text{Se}_2$

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Newly discovered superconductor has high transition temperature ( $T_C \sim 30$  K) without Arsenic and caused interest in understanding mechanism in Fe-based superconductivity. We have performed angle-resolved photoemission spectroscopy (ARPES) experiments on  $A_x\text{Fe}_{2-y}\text{Se}_2$  ( $A=\text{Tl, K, Cs, Rb}$ ) with  $T_C \sim 30$  K. By changing incident photon energy ( $k_z$ ) and polarization, we find out a strong  $k_z$  dependence of electronic band at zone center ( $\Gamma$ -Z) and almost 2-D like electron band at zone corner ( $\pi, \pi$ ). By using different incident photon polarization to tune ARPES intensity of each band, and in combination with matrix element analysis, we identify the geometry symmetry of each orbitals close to Fermi Level and the orbital character of each bands. The band at zone center is not predicted in current calculation, the possible origin is discussed based on ARPES results.