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Band Structure and Fermi Surface of Extremely Overdoped Iron-Based Superconductors TAKAFUMI SATO, K. NAKAYAMA, Y. SEKIBA, Dep. Physics, Tohoku University, P. RICHARD, S. SOUMA, WPI, Tohoku University, Y.-M. XU, Boston College, G. F. CHEN, J. L. LUO, N. L. WANG, H. DING, Chinese Academy of Sciences, T. TAKAHASHI, WPI and Dep. Physics,Tohoku University
— The discovery of superconductivity at 26 K in $LaFeAsO_{1-x}F_x$ has triggered intensive researches on the high-temperature (T_c) superconductivity of iron pnictides and opened a new avenue for high-T_c material research beside cuprates. To elucidate the mechanism of high-T_c superconductivity in terms of the electronic structure, previous angle resolved photoemission spectroscopy (ARPES) studies have been performed on both hole and electron-doped compounds in the optimally- an non(under)-doped region. On the other hand, little is known about the electronic states in the overdoped region. We report ARPES measurements on heavily overdoped pnictides. Our results indicate that the electronic states around the M point play an important role in the high-T_c superconductivity of these materials and suggests that the interband scattering via the antiferromagnetic wave vector essentially controls the T_c value in the overdoped region.

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