Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

Triplet p_z-wave pairing in quasi-one-dimensional $A_2Cr_3As_3$ superconductors (A = K,Rb,Cs)[1] FAN YANG, School of Physics, Beijing Institute of Technology, XIANXIN WU, JIANGPING HU, CONGCONG LE, HENG FAN, Institute of Physics, Chinese Academy of Sciences — We construct minimum effective models to investigate the pairing symmetry in the newly discovered quasione-dimensional superconductor $K_2Cr_3As_3$. We show that a minimum three-band model based on the d_{z^2} , d_{xy} ,and $d_{x^2-y^2}$ orbitals of one Cr sublattice can capture the band structures near Fermi surfaces. In both weak and strong coupling limits, the standard random phase approximation and mean-field solutions consistently yield the triplet pz-wave pairing as the leading pairing symmetry for physically realistic parameters. The triplet pairing is driven by the ferromagnetic fluctuations within the sublattice. The gap function of the pairing state possesses line gap nodes on the k_z = 0 plane on the Fermi surfaces.Experimental consequences of the triplet p_z-wave pairing are also discussed, including the NMR, superfluid density and phase-sensitive dc SQUID experiments.

[1]This work is supported in part by MOST of China (Grants No. 2012CB821400, No. 2011CBA00100, and No. 2015CB921300), NSFC (Grants No. 11190020, No.91221303, No.11334012, and No. 11274041) and the NCET program under Grant No. NCET-12-0038.

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Date submitted: 25 Oct 2015 Electronic form version 1.4