Abstract Submitted for the MAR16 Meeting of The American Physical Society

Magnetism and experimental consequences of p_z -wave spin triplet state in quasi-one-dimensional $A_2Cr_3As_3$ superconductors XIANXIN WU, Institute of Physics, Chinese Academy of Sciences, FAN YANG, 2School of Physics, Beijing Institute of Technology, CONGCONG LE, JING YUAN, SHENGSHAN QIN, HENG FAN, JIANGPING HU, Institute of Physics, Chinese Academy of Sciences — The recently discovered quasi-one dimensional superconductors $A_2Cr_3As_3(A=K,Rb,Cs)$, are found to possess strong frustrated magnetic fluctuations and are nearby a novel in-out co-planar magnetic ground state. Then, we find that the triplet p_z -wave pairing is strongly favored. Finally, with p_z wave pairing state, we obtain the specific heat, superfluid density, Knight shift and spin relaxation rate and find that all these properties at low temperature $(T \ll T_c)$ show powerlaw behaviors and are consistent available experiments. Particularly, the superfluid density determined by the p_z -wave pairing state in this quasi-one dimensional system is anisotropic: the in-plane superfluid density varies as $\Delta \rho_{\parallel} \sim T$ but the out-plane one varies as $\Delta \rho_{\perp} \sim T^3$ at low temperature. The anisotropic upper critical field reported in experiment is consistent with the $S_z = 0$ (i.e, $(\uparrow \downarrow + \downarrow \uparrow)) p_z$ -wave pairing state. We also suggest the phase-sensitive dc-SQUID measurements to pin down the triplet p_z -wave pairing state. References: [1] X. Wu et al., Chin. Phys. Lett. 32, 057401 (2015). [2] X. Wu et al., Phys. Rev. B 92,104511 (2015). [3] X. Wu et al., arXiv: 1507.07451 (2015)

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Date submitted: 26 Oct 2015

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