Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Impurity Scattering Effect and Pairing Symmetry Revealed by Low Temperature Specific Heat in Iron Pnictide Superconductors\textsuperscript{1} GANG MU, Institute of Physics, Chinese Academy of Sciences, BING ZENG, Institute of Physics, CAS, PENG CHENG, ZHAOSHENG WANG, LEI FANG, BING SHEN, CONG REN, LEI SHAN, HUIQIAN LUO, PENGCHENG DAI, HAI-HU WEN

— Low-temperature specific heat $C_p$ was measured on Ba(Fe$_{1-x}$Co$_x$)$_2$As$_2$ single crystals in wide doping region. A sizeable residual specific heat coefficient $\gamma_0$ was observed in the low temperature limit of all samples. The specific heat jump near $T_c$, i.e. $\Delta C_p/T|_{T_c}$ was also determined. It is found that $-\gamma_0, \Delta C_p/T|_{T_c}$ and $T_c$ all share a similar evolution with doping. These can be well understood within the model of $S^\pm$ pairing manner when accounting the cobalt-dopants as unitary scattering centers in the FeAs planes. Our results revealed a non-trivial impact of impurity scattering in FeAs-based superconductors. Angle resolved low temperature specific heat was measured in FeSe$_{1-x}$Te$_x$ single crystals. Oscillations with periodicity of $\pi/2$ was observed at 9 T. This constrains the pairing symmetry with the two possibilities: either d-wave or $S^\pm$.

\textsuperscript{1}Supported by NFSC, MOST of China

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Date submitted: 19 Nov 2009