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Evidence for dynamic spin fluctuation in specific heat of $\mathbf{Sr_{1-x}K_xFe_2As_2}$ crystals FENGYAN WEI, BING LV, FENG CHEN, YUYI XUE, ARNOLD GULOY, CHING-WU CHU, DEPARTMENT OF PHYSICS AND TCSUH, UNIVERSITY OF HOUSTON TEAM, DEPARTMENT OF CHEMISTRY AND ASTRONOMY, UNIVERSITY OF HOUSTON COLLABORATION, LAWRENCE BERKELEY NATIONAL LABORATORY COLLABORATION, HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY COLLABORATION — We measured the zero-field specific heat in $Sr_{1-x}K_xFe_2As_2$ system. The sommerfeld coefficients γ contracting to the band-structure predict, shows a four-fold jump between the non-superconductive $SrFe_2As_2$ and the optimally doped $Sr_{0.55}K_{0.45}Fe_2As_2$. We also found that the electronic contribution actually change significantly with temperature, and cannot be attributed to the entropy of the static spin-density-wave (SDW) alone. Together with its unusual doping dependency, the data suggest the existence of dynamic spin fluctuations. The residual electronic specific heat further suggests a possible phase-separation in the region where SC (superconductivity) and SDW coexist.

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