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Coexistence of the spin-density-wave and superconductivity in the $Ba_{1-x}K_xFe_2As_2$[1] YANG REN, APS, Argonne National Laboratory, H. CHEN, University of Science and Technology of China, Y. QIU, NIST Center for Neutron Research, NIST & Univ. of Maryland, WEI BAO, Los Alamos National Laboratory, R.H. LIU, G. WU, T. WU, Y.L. XIE, X.F. WANG, University of Science and Technology of China, Q. HUANG, NIST for Neutron Research, NIST, X.H. CHEN, University of Science and Technology of China — The relation between the spin-density-wave (SDW) and superconducting order is a central topic in current research on the FeAs-based high T_c superconductors. Conflicting results exist in the LaFeAs(O,F)-class of materials, for which whether the SDW and superconductivity are mutually exclusive or they can coexist has not been settled. Here we show that for the $(Ba, K)Fe_2As_2$ system, the SDW and superconductivity can coexist in an extended range of compositions. The availability of single crystalline samples and high value of the energy gaps would make the materials a model system to investigate the high T_c ferropnictide superconductivity. [arXiv:0807.3950 (2008)]

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