Abstract Submitted
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Magnetic order and structural transition in $BaFe_2As_2$ and α-Fe(Se,Te)[1] WEI BAO, Los Alamos National Lab., YIMING QIU, QINGZHENG HUANG, MARK GREEN, P. ZAJDEL, MIKE FITZSIMMONS, M. ZHERNENKOV, MINHU FANG, B. QIAN, E.K. VEHSTEDT, JINHU YANG, ZHIQIANG MAO, JEFF LYNN, YING CHEN, T. WU, G. WU, XIANHUI CHEN — We report neutron diffraction determination of magnetic structure in $BaFe_2As_2$ [1] and α-Fe(Se,Te) [2], the first in both the 122 and 11-type of the Fe-based materials. The former has the $(\pi, 0)$ and the later $\delta(\pi, \pi)$, $\delta = 0.346$-0.5, kind of in-plane propagation vector. In both systems, the magnetic transition is accompanied by a first-order structural transition which breaks the tetragonal symmetry of the paramagnetic phase. Antiferromagnetic wavevector as well as the moment direction were determined in relation to the associated structural distortion. The fundamentally different magnetic structures in the two types of systems would stimulate further research into the relation between the Fermi surface nesting and electronic correlation effect.
Reference: [1] Huang et al., arxiv:0806.2776 (Phys. Rev. Lett. accepted); [2] Bao et al., arxiv:0809.2058

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