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Ferromagnetism in CuFeSb: Evidence of competing magnetic interactions in Fe-based superconductors JIN HU, BIN QIAN, Tulane University, J. LEE, University of Virginia, GAOCHAO WANG, P. KUMAR, MINGHU FANG, TIJIANG LIU, DAVID FOBES, Tulane University, H. PHAM, L. SPINU, University of New Orleans, XIAOSHAN WU, Nanjing University, M. GREEN, National Institute of Standards and Technology, S.H. LEE, University of Virginia, ZHIQIANG MAO, Tulane University — In this talk, we will report a new layered iron-pnictide compound CuFeSb [1]. This material shares similar layered tetragonal structure with iron-based superconductors, with Fe square planar sheets forming from the edge-sharing iron antimony tetrahedral network. CuFeSb differs remarkably from Fe-based superconductors in the height of anion Z_{anion} from the Fe plane; Z_{Sb} for CuFeSb is ∼1.84 Å, much larger than Z_{As} (1.31-1.51 Å) in FeAs compounds and Z_{Te} (∼1.77 Å) in $Fe_{1+y}Te$. In contrast with the metallic antiferromagneticor superconducting state of iron pnictides and chalcogenides under current studies, CuFeSb exhibits a metallic, ferromagnetic state with $T_c = 375$ K. This finding provide strong experimental evidence for the competition between antiferromagnetic and ferromagneticcorrelations in layered Fe-based superconductors, and that the nature of magnetic coupling within the Fe plane is indeed dependent on the height of anion as predicted in theories [2,3].

[1] B. Qian *et al.*, Phys. Rev. B **85**, 144427 (2012).
[2] C.-Y. Moon, *et a.l*, Phys. Rev. Lett **104**, 057003 (2010).
[3] W.-G. Yin, *et al.*, Phys. Rev. Lett **105**, 107004 (2010).

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