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Competing magnetic fluctuations in $\text{Sr}_3\text{Ru}_2\text{O}_7$ probed by Ti doping DAVID FOBES, J. HOOPER, M. ZHOU, N. DANG, Z.Q. MAO, Tulane University, USA, M.H. FANG, C.M. FENG, Z.A. XU, Zhejiang University, China, M.H. YU, C.J. O'CONNOR, University of New Orleans, USA, G.J. XU, N. ANDERSEN, Riso National Laboratory, Denmark, M. SALAMON, University of Illinois at Urbana-Champaign, USA — The bilayered ruthenate $\text{Sr}_3\text{Ru}_2\text{O}_7$ shows itinerant metamagnetic quantum criticality which has been cited as a textbook example. In this talk we report the effect of nonmagnetic Ti^{4+} impurities on the electronic and magnetic properties of this material. Small amounts of Ti suppress the characteristic peak in magnetic susceptibility near 16 K and result in a sharp upturn in specific heat. The metamagnetic quantum phase transition and related anomalous features are quickly smeared out by small amounts of Ti. These results provide strong evidence for the existence of competing magnetic fluctuations in the ground state of $\text{Sr}_3\text{Ru}_2\text{O}_7$. Ti doping suppresses the low temperature antiferromagnetic interactions that arise from Fermi surface nesting, leaving the system in a state dominated by ferromagnetic fluctuations.

David Fobes
Tulane University, USA

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