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Magnetic Excitation Spectrum of $Ca_{2-x}Sr_xRuO_4$ M.D. LUMSDEN, S.E. NAGLER, R. JIN, D. MANDRUS, Oak Ridge National Laboratory, S. WILSON, Department of Physics and Astronomy, University of Tennessee, P. DAI, Department of Physics and Astronomy, University of Tennessee; Oak Ridge National Laboratory — We have studied the concentration dependence of the magnetic excitation spectrum in single crystal samples of the layered perovskite ruthenates, $Ca_{2-x}Sr_xRuO_4$ for 2>x>0.4. For large x, the spectrum is similar to that observed in pure Sr_2RuO_4 with incommensurate excitations strongly peaked in Q at ($\pm$0.3, $\pm$0.3, q_z), consistent with Fermi-surface nesting wavevectors. As the concentration approaches the x=0.5 quantum critical point, the spectrum becomes broadly distributed in **Q** with a sharp upturn at $\pm$0.3 in both h and k and a flat distribution of scattering across the 2d ferromagnetic zone center. Possible interpretations of this scattering and qualitative similarity to the excitation spectrum of $Sr_3Ru_2O_7$, also in close proximity to a quantum critical point, will be discussed. ORNL is managed by UT-Battelle for the US DOE under contract DE-AC05-00OR22725.

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