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**Magnetic Excitation Spectrum of  $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$**  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,  $\text{Ca}_{2-x}\text{Sr}_x\text{RuO}_4$  for  $2 > x > 0.4$ . For large  $x$ , the spectrum is similar to that observed in pure  $\text{Sr}_2\text{RuO}_4$  with incommensurate excitations strongly peaked in  $\mathbf{Q}$  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  $\mathbf{Q}$  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  $\text{Sr}_3\text{Ru}_2\text{O}_7$ , 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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