

Investigations of Quantum Critical Metamagnetism in $\text{Sr}_3\text{Ru}_2\text{O}_7$ with Hydrostatic Pressure

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The nematic phase observed near the metamagnetic quantum critical end point (QCEP) in $\text{Sr}_3\text{Ru}_2\text{O}_7$ for magnetic fields near the c -axis has been the subject of intense interest¹. We have applied pressure to $\text{Sr}_3\text{Ru}_2\text{O}_7$, and show that, for fields parallel to ab , hydrostatic pressure gradually suppresses the first order jump in the magnetization at the metamagnetic transition, producing a new QCEP at 13.6 ± 0.2 kbar. Magnetic susceptibility measurements near this QCEP show that, surprisingly, the uniform magnetization is not the metamagnetic order parameter. Moreover, we do not find clear evidence of nematic phase formation at this QCEP². These and other aspects of our ongoing high pressure studies of the metamagnetism of $\text{Sr}_3\text{Ru}_2\text{O}_7$ will be presented.

¹e.g. A. W. Rost, R. S. Perry, J. F. Mercure, A. P. Mackenzie, and S. A. Grigera, *Science* **325**, 1360 (2009)

²W. Wu, A. McCollam, S. A. Grigera, R. S. Perry, A. P. Mackenzie, and S. R. Julian, *Phys. Rev. B* **83**, 045106 (2011)