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Specific heat of gadolinium garnets JEFFREY QUILLIAM, SHUCHAO MENG, Department of Physics and Astronomy and Institute for Quantum Computing, University of Waterloo, Waterloo, ON, Canada, LINTON CORRUCCINI, Physics Department, University of California-Davis, Davis, California, USA, OLEG PETRENKO, Department of Physics, University of Warwick, Coventry, United Kingdom, MICHEL GINGRAS, Department of Physics and Astronomy, University of Waterloo, Waterloo, ON, Canada; Canadian Institute for Advanced Research, Toronto, ON, Canada, JAN KYCIA, Department of Physics and Astronomy and Institute for Quantum Computing, University of Waterloo, Waterloo, ON, Canada — Specific heat measurements on two different geometrically frustrated, Heisenberg, garnet lattices will be presented. The specific heat of an isotopically pure, single crystal sample of $Gd_3Ga_5O_{12}$, or GGG, is found to be consistent with previous measurements of the specific heat of GGG [1] and shows no signs of a standard ordering anomaly despite sharp Bragg peaks that were seen in neutron diffraction experiments. A first measurement of the specific heat of polycrystalline $Gd_3Li_2Te_3O_{12}$, in contrast, shows a sharp first-order phase transition at 240 mK. We will discuss possible explanations for such diverse behavior in very similar systems.

[1]Schiffer et al. Phys. Rev. Lett. 74, 2379 (1995).

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