

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Engineering entropy: novel phases on the pyrochlore lattice

OWEN BENTON, HAN YAN, LUDOVIC JAUBERT, NIC SHANNON, Okinawa Institute of Science and Technology — Frustrated pyrochlores such as $\text{Yb}_2\text{Ti}_2\text{O}_7$ push our understanding of magnetism to its limits [1, 2]. Here we explore a highly general model for spins on the pyrochlore lattice. We establish a complete phase diagram for the model [3] and are able to identify several previously unstudied limits where classical order breaks down entirely. Here we focus on two limits of special interest: a classical spin liquid and a “hidden order” spin nematic. These ideas are explored in the context of experiments on the pyrochlore stannates and titanates. [1] J. S. Gardner, M. J. P. Gingras, J. E. Greedan, *Rev. Mod. Phys.* **82**, 53, (2010). [2] K. A. Ross, L. Savary, B. D. Gaulin and L. Balents, *Phys. Rev. X* **1**, 021002 (2011). [3] H. Yan, O. Benton, L. Jaubert and N. Shannon, arXiv:1311.3501.

Owen Benton
Okinawa Institute of Science and Technology

Date submitted: 15 Nov 2013

Electronic form version 1.4