Abstract Submitted
for the MAR13 Meeting of
The American Physical Society

Non-Kramers spin liquids on the pyrochlore lattice JEFFREY G. RAU, HAE YOUNG KEE, University of Toronto — At low temperatures the pyrochlore iridates $Pr_2Ir_2O_7$ shows the puzzling combination of an anomalous Hall effect in the absence of experimentally observed magnetic order. The breaking of time-reversal symmetry indicated by the anomalous Hall effect, but without the usual accompanying magnetic order, points to an exotic state, possibly a chiral spin liquid. Considering the most general symmetry allowed model for the Pr non-Kramers doublets, we use the slave-fermion approach to analyze possible spin liquids at the mean field level. A variety of spin liquids can be generated using the projective symmetry group, with novel properties due to the nature of the non-Kramers doublet states. Applications to $Pr_2Ir_2O_7$ will be discussed.

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Date submitted: 09 Nov 2012 Electronic form version 1.4