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Thermodynamic Spin Glass Transition in a Pyrochlore Heisenberg Model with Weak Disorder KA-MING TAM, MICHEL GINGRAS, University of Waterloo — The conditions for spin glassy behaviors are frustration and disorder, with almost all cases the frustration originating from competing random antiferromagnetic and ferromagnetic couplings. The glassy behavior observed experimentally in the pyrochlore magnet, $Y_2Mo_2O_7$, where the magnetic Mo^{4+} ions interact predominately via nearest neighbor antiferromagnetic exchange with weak disorder presents itself as a new class of spin glass material where the origin of the frustration is mostly geometrical. We provide numerical data obtained from advanced spin glass simulation techniques to show that weak disorder can generate a rugged energy landscape, and lead to a finite temperature spin glass transition in the antiferromagnetic Heisenberg model in pyrochlore lattice in presence of weak disorder.

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