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Glassy spin density wave states and frustrated Kondo chains on the pyrochlore lattice JING LUO, GIA-WEI CHERN, University of Virginia — We investigate the spin density wave (SDW) states in frustrated pyrochlore lattice with degenerate orbitals. The directional nature of t_{2g} orbitals leads to a highly anisotropic electron conduction. In the leading order approximation, the pyrochlore magnet can be viewed as a cross-linking network of Kondo or double-exchange chains. In contrast to models based on Mott insulators, this itinerant magnetism approach provides a natural explanation for several spin and orbital superstructures observed in pyrochlore lattice. Here we show that a novel commensurate multiple-**q** SDW order characterized by Bragg peaks at $\langle \frac{1}{3}, \frac{1}{3}, 1 \rangle$ wavevectors is stabilized at low temperatures when the t_{2g} band is 1/3 or 2/3 filled. Interestingly, the SDW phase exhibits a large number of quasi-degenerate meta-stable states. Through extensive Monte Carlo simulations, we provide strong evidence for the glassy nature of this SDW state. Finally, our results successfully describes the recent experimental observations on spinel $GeFe_2O_4$. [1]

[1]T. Zhou *et al.* APS March Meeting 2016, Abstract K5.00009

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