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Aging and memory effects in the spin jam states of densely populated frustrated magnets ANJANA SAMARAKOON, SEUNG-HUN LEE, University of Virginia, TAKU SATO, Tohoku University, Katahira, Sendai, Japan , HAIDONG ZHOU, RYAN SINCLAIR, University of Tennessee, JUNJIE YANG, TIANRAN CHEN, GIA-WEI CHERN, ISRAEL KLICH, University of Virginia —
Defects and randomness has been largely studied as the key mechanism of glassiness find in a dilute magnetic system. Even though the same argument has also been made to explain the spin glass like properties in dense frustrated magnets, the existence of a glassy state arise intrinsically from a defect free spin system, far from the conventional dilute limit with different mechanisms such as quantum fluctuations and topological features, has been theoretically proposed recently. We have studied field effects on zero-field cooled and field cooled susceptibility bifurcation and memory effects below freezing transition, of three different densely populated frustrated magnets which glassy states we call spin jam, and a conventional dilute spin glass. Our data show common behaviors among the spin jam states, which is distinct from that of the conventional spin glass. We have also performed Monte Carlo simulations to understand the nature of their energy landscapes.

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