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Structure of dynamical correlations developing on top of an entropically designed frustrated manifold MATHIEU TAILLEFUMIER, ITP, Goethe University, JULIEN ROBERT, LLB - CEA Saclay, F-91191 Gif-sur-Yvette cedex, France., BENJAMIN CANALS, Institut Neel - 25 avenue des Martyrs, BP 166, 38042 Grenoble cedex 9, France. d LASSP, Clark Hall, Cornell University, Ithaca, NY 1485, CHRISTOPHER HENLEY, LASSP, Clark Hall, Cornell University, Ithaca, NY 14853-2501. — By combining monte carlo and spin dynamics simulations, we investigate the precessional dynamics of the classical kagome antiferromagnet through the calculation of the dynamical structure factor $S(\mathbf{Q}, t)$. Recently, evidences for spin wave like excitations in the two distinct low temperature regimes whose temperature ranges are given by the entropically driven onset of spin plane coplanarity at $T_0/J \approx 5\ 10^{-3}$ has been given. However, only a little is known about the longer time scales describing the fluctuations around the ground-state manifold. We give more insight about this relaxationnal dynamics and establish in particular the temperature and wave-vector dependence of the lifetime of locally ordered states. Although the infinite components spins model qualitatively accounts for the dynamical properties in the cooperative paramagnetic regime, we show at lower temperature that the entropic selection (i) leads to strongly different dynamical correlations for the in- plane and out-of-plane spin components below the transition, and (ii) almost suppresses the diffusive behaviour observed in the cooperative regime in favour of mainly propagative spin transfers.

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