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Spin dynamics in the classical kagome antiferromagnet: Theory versus experiments MATHIEU TAILLEFUMIER, Okinawa institute of science and technology, JULIEN ROBERT, Laboratoire Leon Brillouin, CHRISTOPHER HENLEY, LASSP, Cornell university, RODERICH MOESSNER, Max Planck institute for complex systems, BENJAMIN CANALS, Institut Neel — We investigate numerically the dynamical properties of the classical antiferromagnetic Heisenberg model on the kagome lattice using a combination of Monte Carlo method and molecular dynamics. We find that order from disorder induces a distribution of timescales in the cooperative paramagnetic regime (ie far above the transition toward coplanarity), as recently reported experimentally in the deuterium jarosite. At lower temperature, when the octupolar order is well established, we show that the weathervane loop fluctuations control the system relaxation : the time distribution observed at higher temperatures splits into two distinct time scales associated with fluctuations in the plane and out of the plane of coplanarity. The temperature and wave vector dependences of these two components are qualitatively consistent with loops diffusing in the entropically induced energy landscape. Numerical results are discussed and compared within analytical models and recent experiments obtained in both classical and quantum realisations of the kagome lattice.

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