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Thermally active two dimensional artificial spin-ice systems: experiment and simulation

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Recently it has been possible to fabricate two dimensional arrays of interacting nano-magnetics which are thermally active within the time-frame of a photoemission electron microscopy (PEEM) experiment. Employing X-ray magnetic circular dichroism, such a local experimental probe can image the changing magnetic state of finite kagome and square lattice systems. Both equilibrium and non-equilibrium conditions have been considered revealing non-trivial dynamics which for the case of the kagome system depends strongly on the underlying magnetic frustration. To give insight into the observed dynamics, monte carlo and kinetic monte carlo methods are performed using a simple Ising-like Hamiltonian. This talk will discuss the origins of such an Ising-like Hamiltonian and its application to specific experiments.