

Abstract Submitted  
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**Spin Ice correlations in a macroscopic system**<sup>1</sup> PAULA MELLADO, ANDRES CONCHA, L. MAHADEVAN, School of Engineering and Applied Sciences, Harvard University — We report the realization of spin ice like correlations in a macroscopic array of ferromagnetic rods arranged in a honeycomb lattice. We found that this system has a rich dynamics that can be rationalized as the result of the interplay between the viscous rotation of each rod and Coulomb like interactions between magnetic charges located at the ends of the magnets. The dynamical response of this system has also been explored by using an external magnetic dipole moving at a distance  $h$  from the lattice. A clear separation between the interaction strengths permitted us to observe localized as well as a collective dynamics depending on the value of two dimensionless numbers; one associated with the two relevant time scales of the system and the other related with the strength of internal and external magnetic forces. This new spin-ice realization will allow the manipulation of parameters almost impossible to control on its microscopic relatives, such as inertia, vacancies, and quenched geometrical disorder between others.

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