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Classical Magnetic Frustration

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Tsao, Eugene J., "Classical Magnetic Frustration" (2017). *Spring 2017*. 113.
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CLASSICAL MAGNETIC FRUSTRATION

Eugene J. Tsao

Mentor: E. A. Henriksen

We present a classical analogue to the spin glass state realized experimentally via a system of freely rotating bar magnets that is capable of exploring dipole wave dynamics and macroscopic frustration. We report low amplitude wave transport in a 1-dimensional chain, and observe a variety of metastable states in the square, triangular, kagome, and honeycomb lattices. We confirm features observed in the physical 1-dimensional chain and square lattice through a Monte Carlo simulation of interacting finite-length dipoles.