

Abstract Submitted
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Consensus and Frustration in the Heisenberg Model WESLEY KRUEGER, MANUEL BERRONDO, Brigham Young University — In the creation of a model for flocking behavior, we have developed a set of two rules, termed consensus and frustration, which consist of a topologically unique non-symmetric alignment tendency among individual particles, coupled with an antagonistic, generally external influence opposing full particle alignment. These rules act to produce a spectacular range of deterministic, complex motion. Placing the particles in a lattice structure and allowing the velocity to go to zero produces a modified Heisenberg spin model. We discuss the development and exploration of such a model; in particular the compatibility of common numerical integration methods with our consensus and frustration rules and quantification of the results using thermodynamic techniques.

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