

Abstract Submitted  
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**Anatomy of a Spin: The Information-Theoretic Structure of Classical Spin Systems** RYAN JAMES, University of California, Davis — It is well known that classical spin systems store information in statistical deviations from independence, such as clustering in the Ising model. Drawing on recent results in the study of stochastic processes, we study the way this information is stored in a variety of lattices. In particular, we decompose the thermodynamic entropy density into two components: the *ephemeral information*, measuring the amount of independent information in the lattice, and the *bound information*, measuring intrinsically collective behavior. We then demonstrate the behavior of these two measures, as well as related ones, as a function of temperature for the ferromagnetic nearest-neighbor Ising model on the 1- and 2-dimensional square lattices, as well as the Bethe lattice with branching factor 3.

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