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**Phase Transition of the Random Field Ising Model at Zero Temperature and Positive Temperature**[1] YONG WU, JONATHAN MACHTA, University of Massachusetts Amherst — The random field Ising model (RFIM) is studied numerically at both zero and positive temperature. Thermal states and thermodynamic properties are obtained for all temperatures using the the Wang-Landau algorithm. The specific heat and susceptibility display sharp peaks in the critical region for most realizations of random fields for large systems and strong enough disorder. These sharp peaks result from large domains flipping and are strongly correlated with the domains found in ground states. Although the correlation is higher for stronger disorder, it remains for relatively low disorder. The correlation between ground states and thermal states is a concrete manifestation of the zero temperature fixed point scenario.

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