

Magnetic Ground State Selection Through Quenched Charge Correlation

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Frustrated magnetism, where disordered and exotic ground states can be selected at low temperatures, is a rich field in condensed matter physics as there are many variations of competing interactions and anisotropy that real materials can display. Quenched disorder, whether naturally occurring or intentionally introduced, can also be very important to ground state selection in such materials. I will discuss how through the combination of neutron scattering (sensitive to magnetic correlations) and x-ray scattering (sensitive to charge correlations in such materials) can be used to characterize the quenched disorder, and ultimately to understand the role of this disorder in ground state selection. I'll start with a crash course on scattering experiments and magnetism, then I will illustrate how we approach these problems experimentally using two examples from my own work.

