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Quantum vs. structural disorder in triangular antiferromagnets

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Quantum disordered states in frustrated magnets are model cases of quantum entanglement and potential hosts for unconventional, fractionalized excitations. The formation of these states is typically associated with competing exchange couplings, although structural disorder can lead to a somewhat similar phenomenology, including the absence of long-range magnetic order and the presence of excitation continua.

In this talk, I will discuss the interplay of quantum and structural disorder in Yb-based triangular antiferromagnets that were recently proposed as spin-liquid candidates. Thermodynamic measurements and neutron scattering results will be used to analyze the coupling regime and the nature of magnetic ground state in these structurally simple but microscopically very complex materials. The presence of putative fractionalized excitations will be challenged by thermodynamic measurements in the milli-K temperature range, and prospects of reaching a genuine quantum spin liquid state in this family of compounds will be discussed.

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