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标题: Detecting nonmagnetic excitations in quantum magnets
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摘要: Many unconventional quantum phases host special nonmagnetic excitations such as photons and visons. We discuss two possible ways to detect these excitations experimentally. First, spin-lattice coupling mixes the excitations with phonons. The phonon spectral function acquires new features that can be detected by neutron or x-ray scattering. Second, valence-bond fluctuations translate into charge density fluctuations on nonbipartite lattices. Such charge fluctuations can be characterized by conventional spectroscopies such as terahertz spectroscopy. As by-products, we discuss the general mechanisms of spin-Peierls transitions in two-and three-dimensional spin liquids.
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