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【734】 Tunable critical correlations in kagome ice

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Kagome ice is a two dimensional critical state of algebraic spin correlations formed by applying a moderate magnetic field along the [111] direction of a pyrochlore spin ice. Field tilts away from perfect alignment tune the algebraic correlations, leading to symmetry-sustaining Kasteleyn transitions. We present a detailed experimental/theoretical study of the kagome ice Coulomb phase, exploring the tuning of critical correlations by applied field, temperature and crystal orientation. We observe the continuous modification of algebraic correlations with polarized neutron scattering experiments, which are described by numerical simulations of an idealized model. Kagome ice is a remarkable example of a critical/topological state in a real system subject to the experimental control.

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