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Quantum criticality of altermagnetism

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The term *altermagnetism* has recently been introduced to describe the Néel order of a class of materials whose magnetic sublattices are neither related by translation nor inversion. These materials have so far mostly been studied using non-interacting electron models. While technically appealing, this approach fails to capture the inherently correlated nature of the magnetic order as well as its relation to proximate phases in the phase diagram. Employing a recently proposed minimal microscopic model for altermagnetism, we explicitly derive a nonlinear sigma model describing the long-wavelength fluctuations of the staggered magnetization. Including fermionic excitations, we expose a tractable interacting low-energy theory of a metallic altermagnet. In this talk, I will explain the rationale for this theory and argue how the altermagnetic symmetries modify the quantum critical scaling of antiferromagnets.

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