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The partition function of a ferromagnet up to three loops

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Abstract content

The low-temperature behavior of ferromagnets with a spontaneously broken symmetry O(3) -> O(2) is analyzed within the perspective of effective Lagrangians. The leading coefficients of the low-temperature expansion for the partition function and the spontaneous magnetization are calculated up to three loops and the results are compared with the condensed matter literature. The model-independent and systematic effective field theory approach proves to be superior to conventional condensed matter methods such as spin-wave theory.

Summary

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