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Title:	Effect of magnetic field on noncollinear magnetism in classical bilinear-biquadratic Heisenberg model
Authors:	Pasrija, K. (/jspui/browse?type=author&value=Pasrija%2C+K.) Kumar, Sanjeev (/jspui/browse?type=author&value=Kumar%2C+Sanjeev)
Keywords:	Heisenberg model Bilinear-biquadratic Monte Carlo simulation
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Abstract:	We present a Monte Carlo simulation study of a bilinear-biquadratic Heisenberg model on a two-dimensional square lattice in the presence of an external magnetic field. The study is motivated by the relevance of this simple model to the non-collinear magnetism and the consequent ferroelectric behavior in the recently discovered high-temperature multiferroic, cupric oxide (CuO). We show that an external magnetic field stabilizes a non-coplanar magnetic phase, which is characterized by a finite ferromagnetic moment along the direction of the applied magnetic field and a spiral spin texture if projected in the plane perpendicular to the magnetic field. Real-space analysis highlights a coexistence of non-collinear regions with ferromagnetic clusters. The results are also supported by simple variational calculations.
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