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Finite temperature BKT phase transition in the planar psi^4 model with a strongly modulating potential

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We employ analytical as well as numerical Monte Carlo methods to
discuss the BKT phase transition in the finite-temperature psi^4 model over a square lattice in the presence of a strong modulation of the chemical potential. By going through a systematic mapping over the anisotropic planar XY model with modulated spin interaction strengths, we show that the strength of the modulation only affects the effective anisotropy of the XY model and that the BKT phase transition is present even at very large values of the modulation, thus evidencing the persistence of the two-dimensional critical behavior of the system even in that limit.

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