

Critical phenomena in systems with a joint multicritical and Lifshitz point

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We propose the model that allows one to describe the critical phenomena in systems which have a joint multicritical and Lifshitz-point-like behavior. The effective Hamiltonian for such type of systems includes arbitrary nonlinearities and higher gradients of the order parameters. An expression for the upper critical dimension (CD) of such systems is found from the convergence condition of renormalization procedure. We show that the considered model is invariant under the anisotropic scale transformations if the dimension of space is coincide with critical one. The infinitesimal operator of the corresponding Lie group is found. The analytical properties of the corresponding variation equations are discussed.