

2D Falicov-Kimball model at finite-temperatures

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Finite-temperature properties of the 2D Falicov-Kimball model have been studied in the perturbative regime, i.e. for $t/U \ll 1$, where $t = 1$ is the hopping constant and $U = 10$ denotes the Coulomb interaction strength. In our study, we have determined the phase diagram of the model in the fourth-order of the perturbation theory, where our model constitutes the Ising model with more complicated frustrated antiferromagnetic interactions. The Monte Carlo method, Binder's cumulat and finite-size magnetization profiles were employed to investigate the phase transition lines.

9.7 cm

13.4 cm

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