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## Critical behavior of 4-dimensional Ising model with higher-order tensor renormalization group

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Critical behavior of 4-dimensional Ising model has been attracting the interest of particle physicists for a long time in the context of the triviality of the  $\phi^4$  theory. The perturbative renormalization group analysis predicts logarithmic corrections to the mean-field type of scaling properties for this model. Although a lot of numerical work have been carried out to make a nonperturbative verification of the logarithmic corrections, it is still a difficult task to confirm them. To this problem we apply the higher order tensor renormalization group (HOTRG), which is one of the tensor network schemes allowing us to perform the finite size scaling study (FSS) with much larger volumes than the Monte Carlo simulations. We discuss a possible scenario for the phase transition of this model.

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