Phase diagram of the Heisenberg model: machine learning method

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Abstract

Machine learning, as one of the most powerful tools, has provided an unprecedented perspective on the study of classifying different phases and phase transitions between them in condensed matter physics. Here, we employed unsupervised machine learning algorithms to investigate magnetic ground states for systems of spontaneous symmetry breaking below the Curie temperature. In this study, we investigate the classical phase diagram of the Heisenberg model on square and honeycomb lattices using the deep machine learning algorithm. In the classical treatment, our findings show a good agreement with the classical phase of the Heisenberg model obtained by means of other conventional methods.

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