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AIP Conference Proceedings

Volume 2138, 21 August 2019, Article number 030010

4th Innovation and Analytics Conference and Exhibition, IACE 2019; Universiti Utara MalaysiaKedah; Malaysia; 25 March 2019 through 28 March 2019; Code 150892

Phase diagrams of Potts model with competing binary-ternary-quaternary interactions on Cayley tree (Conference Paper) [\(Open Access\)](#)

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Abstract

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We study the phase diagrams for the Potts model with competing binary, ternary and quaternary interactions on Cayley tree of order 2. At vanishing temperature T, the phase diagram is fully determined for all values of competing binary, ternary and quaternary interactions. We extend the results (for the case $J_q = 0$) obtained by Ganikhodjaev and Mohd Rodzhan [8]. Our results show that the appearance of addition phases: Antiferromagnetic and Period 6, in the case of nonzero quaternary interactions for several ranges of the competing parameters. © 2019 Author(s).

Funding details

Funding sponsor	Funding number	Acronym
International Islamic University Malaysia	RIGS17-092-0667	IIUM
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Funding text

This work was supported by IIUM Research Initiative Grant Scheme (RIGS) Research Project RIGS17-092-0667. The first author would like to thank the Centre of Postgraduate Studies International Islamic University Malaysia for its financial support.

ISSN: 0094243X
ISBN: 978-073541881-3
Source Type: Conference Proceeding
Original language: English

DOI: 10.1063/1.5121047
Document Type: Conference Paper
Volume Editors: Ibrahim H., Yaakob A.M., Aziz N., Zulkepli J.
Publisher: American Institute of Physics Inc.

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