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Phase Transition for a Mixed Spin-1/2 and Spin-s_B System with a Transverse Crystal Field

JIANG Wei,[1] XIAO Gui-Bin,[2] WEI Guo-Zhu,[3] DU An,[3] and ZHANG Qi[3]

[1] College of Sciences, Shenyang University of Technology, Shenyang 110023, China
[2] Computer Department, Shenyang Administration Institute, Shenyang 110032, China
[3] College of Sciences, Northeastern University, Shenyang 110006, China
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Abstract: The critical behaviors of a mixed spin-1/2 and spin-s_B Ising system with a transverse crystal field are studied by use of the effective-field theory with correlations. The effect of the transverse crystal field on transition temperatures is investigated numerically for the honeycomb (z=3) and square (z=4) lattices. The results show that there is no tricritical point for the system.

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Key words: Ising model, transverse crystal field, phase diagram

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