

The Spectral Power Amplification on the Regular Lattices

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Abstract : We show that a simple transformation between the regular lattices (the square, the triangular, and the honeycomb) belonging to the same dimensionality can explain in a natural way the universality of the critical exponents found in phase transitions and critical phenomena. It suffices that the Hamiltonian and the lattice present similar writing forms. In addition, it appears that if a property can be calculated for a given lattice then it can be extrapolated simply to any other lattice belonging to the same dimensionality. In this study, we have restricted ourselves on the spectral power amplification (SPA), we note that the SPA does not have an effect on the critical exponents but does have an effect by the criticality temperature of the lattice; the generalisation to other lattice could be shown according to the containment principle.

Keywords : ising model, phase transitions, critical temperature, critical exponent, spectral power amplification

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