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The q -state Potts Model: Partition functions and their zeros in the complex temperature- and q-plane

By Hubert Klüpfel

GRIN Verlag Mrz 2014, 2014. Taschenbuch. Book Condition: Neu. 210x148x9 mm. This item is printed on demand - Print on Demand Neuware - Master's Thesis from the year 1999 in the subject Physics - Theoretical Physics, grade: 1,0, State University of New York at Stony Brook (Institute for Theoretical Physics), course: -, language: English, abstract: In this thesis results on the Partition function $ZG(T, q)$ for the q state Potts Model on finite polygonal lattices G are presented. These are polynomials in a and q . The first step is to calculate all the coefficients of $ZG(a, q)$ using a transfer matrix method. The only points of non analyticity are the zeros of the partition function; in the thermodynamic limit the complex temperature zeros form a continuous curve B via coalescence. This is the locus where the free energy is non analytic. The zeros of $Z(a, q)$ in the complex q plane for finite a and in the complex a plane for integer and non integer values of q are plotted. For $a = 0$ the partition function reduces to the chromatic polynomial $PG(q)$ of the graph and the zeros are called chromatic zeros. The behavior of those zeros...



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