Mathematical Physics

On Quantum Markov Chains on Cayley tree II: Phase transitions for the associated chain with XY-model on the Cayley tree of order three

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In the present paper we study forward Quantum Markov Chains (QMC) defined on a Cayley tree. Using the tree structure of graphs, we give a construction of quantum Markov chains on a Cayley tree. By means of such constructions we prove the existence of a phase transition for the XY-model on a Cayley tree of order three in QMC scheme. By the phase transition we mean the existence of two now quasi equivalent QMC for the given family of interaction operators $\{K_{<x,y>}\}$.

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