

New constant of motion for coevolving voter model

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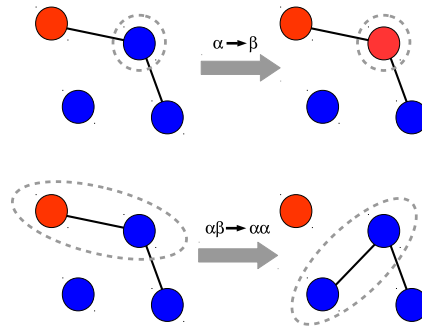
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In the coevolving voter model [1] a topology of the network changes in response to the voter dynamics on the network. In detail, nodes can change their state and links can rewire in order to connect nodes of the same state.



Rysunek 1: Possible elementary events in the coevolving voter model: a flip $\alpha \rightarrow \beta$ (upper) and a rewiring $\alpha\beta \rightarrow \alpha\alpha$ (bottom).

Our work is focused on conservation laws for coevolving voter model. We treat mean degree of nodes in different states as separate variables, which do not have to be equal. This allows to discuss the magnetization of nodes and the magnetization of links as potentially independent variables. Mean field calculation indicate that these two values are coupled – their linear combination is constant of motion. Obtained results were confirmed by numerical simulations.

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[1] F. Vazquez, V. M. Eguíluz, M. San Miguel, Phys. Rev. Lett. **100**, 108702 (2008).