

Graph Entropy Based on Strong Coloring of Uniform Hypergraphs

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Abstract

The classical graph entropy based on the vertex coloring proposed by Mowshowitz depends on a graph. In fact, a hypergraph, as a generalization of a graph, can express complex and high-order relations such that it is often used to model complex systems. Being different from the classical graph entropy, we extend this concept to a hypergraph. Then, we define the graph entropy based on the vertex strong coloring of a hypergraph. Moreover, some tightly upper and lower bounds of such graph entropies as well as the corresponding extremal hypergraphs are obtained.

Keywords: hypergraph, graph entropy, strong coloring