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Graph-based counting theory and its applications. (Chinese. English summary) Zbl 07366651
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Summary: Due to the rapid development of information science, graph theory and combinatorics have played an increasingly important role in the study of discrete objects. Led by professor Fuji Zhang, the research team of combinatorics and graph theory of Xiamen University has devoted itself to the study of graph-based counting theory and applications in statistic physics and analytical chemistry for a long time. During this time, the team adheres to the problem-oriented and application-driven approach. In this paper, we survey the main work conducted by the team in past two decades, including matching theory, combinatorial enumeration, topological graph theory, combinatorial knot theory, random graph theory, network optimization and related applications.

MSC:

05C30 Enumeration in graph theory
05C90 Applications of graph theory
57M15 Relations of low-dimensional topology with graph theory

Keywords:
matching enumeration; combinatorial enumeration; combinatorial knot theory; graph enumeration

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