Some Combinatorial Generation Techinques and Their Applications in Vertex Enumeration

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Abstract

The well-known vertex enumeration problem calls for generating all the vertices of a polyhedron, given by its description as a system of linear inequalities. Recently, a number of combinatorial techniques have been developed and applied successfully to a large number of enumeration problems in different areas. Specifically, we consider the so-called flashlight method, the supergraph method, and the hypergraph transversal method. We give several examples where these methods are applicable to the vertex enumeration problem, and also discuss some of their limitations.