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Stratified Approach in Combinatorics

An important problem in combinatorics is the classification of the f-vectors (number of simplices) of all triangulations of certain type. The study of such problem is culminated in the complete classification of f-vectors of simplicial polytopes in the 70s. To study the problem for triangulations of arbitrary polyhedron, we try the stratified approach. We are able to (1) generalise the classical results on the complete linear conditions on f-vectors, and (2) find a combinatorial structure inherent in any (topologically reasonable) stratification. We hope the approach may provide some fresh idea in the study of the ancient problem. We also hope that the combinatorial structure may unify many linear combinatorial theories.