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Abstract:	The concept of shellability is an easy tool to verify whether the corresponding simplicial complex is Cohen-Macaulay or not. This dis- sertation aims at the detailed study of shellability and its generaliza- tion to the nonpure case, based on the established work of Bj¨o rner and Wachs. Some of the fundamental properties of nonpure shellability are taken into consideration. We begin the report with a brief introduction to some of the basic notions of commutative algebra and certain rudimentary topological results. To each simplicial complex, we associate a quotient ring called the Stanley-Reisner ring whose algebraic properties are firmly related to the combinatorial properties of the simplicial complex. The study of topological properties of shellable simplicial complex shows that it has the homotopy type of a wedge of spheres of certain dimensions. Along with the fundamental ideas and properties of posets, this work also elaborate on the M¨o bius function, M¨o bius inversion and the order complexes associated with posets. Shellability of a partially or- dered set is studied by considering the order complex associated with it. The method of lexicographic shellability in its general form is in- troduced along with a detailed example of a nonpure lexicographically shellable poset, the k-equal partition lattice. Finally, we exploit an easy computation of Betti numbers of the k-equal partition lattice through the study of standard tableaux of hook shape.
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