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Nota di contenuto   1 Preliminaries -- 2 Basic topological properties of finite spaces -- 3 Minimal finite models -- 4 Simple homotopy types and finite spaces -- 5 Strong homotopy types -- 6 Methods of reduction -- 7 h-regular complexes and quotients -- 8 Group actions and a conjecture of Quillen -- 9 Reduced lattices -- 10 Fixed points and the Lefschetz number -- 11 The Andrews-Curtis conjecture.

Sommario/riassunto   This volume deals with the theory of finite topological spaces and its relationship with the homotopy and simple homotopy theory of polyhedra. The interaction between their intrinsic combinatorial and topological structures makes finite spaces a useful tool for studying problems in Topology, Algebra and Geometry from a new perspective. In particular, the methods developed in this manuscript are used to study Quillen's conjecture on the poset of p-subgroups of a finite group and the Andrews-Curtis conjecture on the 3-deformability of contractible two-dimensional complexes. This self-contained work constitutes the first detailed exposition on the algebraic topology of finite spaces. It is intended for topologists and combinatorialists, but it is also recommended for advanced undergraduate students and graduate students with a modest knowledge of Algebraic Topology.