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*Skeletal polyhedra, complexes, and their classification by symmetry*

The study of highly symmetric polyhedral structures in Euclidean 3-space has a long and fascinating history tracing back to the early days of geometry. Much recent work has focused on skeletal polyhedra and complexes, and their classification by symmetry. A skeletal polyhedron is a finite or infinite discrete structure made up of finite or infinite polygons as faces, with two faces on each edge and a circular vertex-figure at each vertex. The faces can be planar or skew, finite polygons, or can be linear, zigzag, or helical, infinite polygons. These skeletal figures exhibit fascinating geometric, combinatorial, and algebraic properties and include many new finite and infinite polyhedral structures. We discuss approaches to the classification for some of the most prominent classes of skeletal figures including the regular, chiral, or uniform polyhedra, as well as regular skeletal complexes with more than two edges meeting at an edge.