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The Classification of Chiral Polyhedra

This talk presents the complete enumeration of chiral polyhedra in Euclidean 3-space. Chiral, or irreflexibly regular, polyhedra are nearly regular polyhedra; their geometric symmetry groups have two orbits on the flags (regular polyhedra have just one orbit), such that adjacent flags are in distinct orbits. There are several (very) infinite families of chiral polyhedra, each either with finite skew polygonal faces and vertex-figures or with infinite helical faces and planar vertex-figures. Their geometry and combinatorics are rather complicated.