Cohomology of shellable posets

Guille Carrión Santiago

Universidad de Málaga
g.carrionsantiago@uma.es

Shellability is a well-known notion in combinatorics, topology, and geometry, and it has several useful consequences of algebraic, combinatorial, and topological nature. Examples of shellable posets or complexes include, for instance, the order complex of Coxeter groups or the intersection lattice of a hyperplane arrangement.

In essence, a shellable complex is a simplicial complex such that there exists an ordering of its maximal faces $F_1, F_2, \ldots, F_n$ such that F_k is glued to $\bigcup_{i<k} F_i$ by the maximal faces of its boundary. In this talk, we will explore some of the properties of these gorgeous combinatorial objects and use them to determine when the cohomology modules with coefficients in a functor vanish.