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*Several Convex-Ear Decompositions.*

We give convex-ear decompositions for the order complexes of several classes of posets, namely supersolvable lattices with non-zero Möbius functions and rank-selected subposets of such lattices, rank-selected geometric lattices, and rank-selected face posets of shellable complexes which do not include the top rank. These decompositions give us many new inequalities for the h-vectors of these complexes. In addition, our decomposition of rank-selected face posets of shellable complexes allows us to prove inequalities for the flag h-vector of face posets of Cohen-Macaulay complexes. (Received July 02, 2006)