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Homological characterizations of “small” cardinals

We consider a number of homological invariants of the “small” cardinals ω_n . We show, for example, that ω_n is the least ordinal whose n th sheaf cohomology group is nonzero. The best-understood case is that of $n = 1$: here the nonzero group “is” that of nontrivial coherent families of functions on ω_1 . We consider what the (ZFC) existence of analogous, higher-dimensional families corresponding to higher nonzero homology groups begins to tell us about the combinatorics of higher ω_n .