

LS-category of moment-angle manifolds and Massey products

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We give various bounds for the Lusternik-Schnirelmann category of moment-angle complexes \mathcal{Z}_K and show how this relates to vanishing of Massey products in $H^*(\mathcal{Z}_K)$. In particular, we characterise the Lusternik-Schnirelmann category of moment-angle manifolds \mathcal{Z}_K over triangulated d -spheres K for $d \leq 2$, as well as higher dimension spheres built up via connected sum, join, and vertex doubling operations. This characterisation is given in terms of the combinatorics of K , the cup product length of $H^*(\mathcal{Z}_K)$, as well as a certain Massey products. Some of the applications include calculations of the Lusternik-Schnirelmann category and the description of conditions for vanishing of Massey products for moment-angle complexes over fullerenes and k -neighbourly complexes.