

”The multiplicity conjecture for barycentric subdivisions of simplicial complexes”

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For a simplicial complex Δ we study the effect of barycentric subdivision on ring theoretic invariants of its Stanley-Reisner ring. In particular, for Stanley-Reisner rings of barycentric subdivisions we verify a conjecture by Huneke and Herzog & Srinivasan, that relates the multiplicity of a standard graded k -algebra to the product of the maximal shifts in its minimal free resolution up to the height. On the way to proving the conjecture we develop new results on behavior of dimension, Hilbert series, multiplicity, local cohomology, depth and regularity when passing from the Stanley-Reisner ring of Δ to the one of its barycentric subdivision. This is joint work with Volkmar Welker.