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Michael Goff* (mgoff@math.washington.edu), 4210 Brooklyn Ave NE, Apartment 104, Seattle, WA 98105. *On the Multiplicity Conjecture for Simplicial Complexes*. Preliminary report.

We report on recent progress on the multiplicity conjecture of Huneke, Herzog and Srinivasan for the case of Stanley-Reisner ideals. If Γ is a simplicial complex and I_Γ its Stanley-Reisner ideal, we show that I_Γ satisfies the multiplicity upper bound conjecture if Γ is a three-dimensional complex, or if Γ is an even-dimensional homology manifold with sufficiently many vertices. We also show that I_Γ satisfies the multiplicity lower bound conjecture to within a factor of $(1 - \epsilon)$ if Γ has sufficiently many vertices, and we place strong restrictions on those complexes that “might” fail. (Received July 25, 2007)