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In 1966 Diana Taylor established a method to construct a free resolution of an ideal  $I$  generated by  $p$  monomials using the simplicial chain maps of a simplex on  $p$  vertices. Work of Bayer, Peeva and Sturmfels later extended Taylor's work to show that as long as such a simplicial complex satisfies certain homological conditions, it can support a free resolution of  $I$ .

In this talk we construct a family of simplicial complexes where the 2nd complex in the family supports a free resolution of the second power  $I^2$  where  $I$  is a square-free monomial ideal. We will also discuss the generalization of our work to higher powers of  $I$ . This project stems from work initiated at a BIRS "Women in Commutative Algebra" meeting in Fall 2019. (Received August 01, 2020)