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Susan M. Cooper* (susan.cooper@umanitoba.ca), **Sabine El Khoury**, **Sara Faridi**, **Sarah Mayes-Tang**, **Susan Morey**, **Liana M. Sega** and **Sandra Spiroff**. *Powers of Monomial Ideals and Free Resolutions*.

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 . The idea of using the structure of I to further find information about the Betti numbers of powers of I becomes quite delicate quickly. In this talk we construct a simplicial complex labeled with the generators of I^r which supports a free resolution of I^r for I a square-free monomial ideal. This project stems from work initiated at a BIRS "Women in Commutative Algebra" meeting in Fall 2019. (Received August 30, 2021)