1167-13-111      **Susan Cooper**, **Sabine El Khoury**, **Sara Faridi**, **Sarah Mayes-Tang** and **Susan Morey\***, Department of Mathematics, Texas State University, 601 University Dr., San Marcos, TX 78666, and **Liana Sega** and **Sandra Spiroff**. *Polyhedral Resolutions of Powers of Monomial Ideals of Projective Dimension One.*

Using combinatorial structures to obtain resolutions of monomial ideals traces back to Diana Taylor's thesis, where a simplex associated to the generators of a monomial ideal was used to construct a free resolution of the ideal. This concept has been expanded, with various authors determining conditions under which simplicial or cellular complexes can be associated to monomial ideals to produce a free resolution. This talk will focus on powers of square-free monomial ideals of projective dimension one. Faridi and Hersey proved that a monomial ideal $I$ has projective dimension one if and only if there is an associated tree $T$ that supports a free resolution of $I$. Using a quotient of a standard graph product, we construct from this tree a set of graphs $T^r$. By iteratively appending cells of increasing dimensions, these graphs can be viewed as the one-skeleta of polyhedral complexes that resolve the powers $I^r$ of $I$. Moreover, each of these resolutions will be minimal resolutions. These cellular resolutions can also be viewed as strands of the resolution of the Rees algebra of $I$. This work is part of a research project initiated at a BIRS workshop "Women in Commutative Algebra" in Fall 2019 where the authors studied resolutions of powers of monomial ideals. (Received February 26, 2021)