

1145-05-1953

Anastasia Chavez* (anachavez@math.ucdavis.edu), **Jesús A. De Loera**, **Ana Paulina Figueroa**, **Yuanbo Li**, **Edgar Possani** and **Lingyun Ye**. *Polyhedral cones generated by cycles of a graph.*

The cycles of a graph G generate two combinatorial objects:

1. a polyhedral cone \mathcal{C}_G we call the *cone of cycles of G* , where cycles are the extreme rays of \mathcal{C}_G , and
2. an integral semigroup $Sg(G)$ we call the *semigroup of cycles of G* , where cycles of G are the generators of $Sg(G)$.

Studying these objects is motivated by the simplicity that a cone and semigroup perspective can offer for several open questions in graph theory. For example, the Double Cover conjecture asserts any graph G has a cycle covering such that every edge of G is contained in exactly two cycles. In terms of semigroups, this simplifies to the equivalent statement that $(2, \dots, 2) \in Sg(G)$ for all G .

In this talk we describe some properties and algorithms of the cone and semigroup for an undirected graph. (Received September 24, 2018)