

1135-05-537

Anastasia M Chavez*, a.chavez@berkeley.edu, and **Nicole Yamzon**. *The Dehn-Somerville relations and the Catalan matroid.*

The f -vector of a d -dimensional polytope P stores the number of faces of each dimension. When P is simplicial the Dehn-Sommerville relations condense the f -vector into the g -vector, which has length $\lceil (d+1)/2 \rceil$. Thus, to determine the f -vector of P , we only need to know approximately half of its entries. This raises the question: Which $\lceil (d+1)/2 \rceil$ subsets of the f -vector of a general simplicial polytope are sufficient to determine the whole f -vector? We prove that the answer is given by the Catalan matroid. This is joint work with Nicole Yamzon. (Received September 07, 2017)