

1116-52-206

Carl W. Lee (lee@uky.edu), University of Kentucky, Department of Mathematics, 715 Patterson Office Tower, Lexington, KY 40506, and **Sarah A. Nelson*** (sarah.nelson@uky.edu), University of Kentucky, Department of Mathematics, 715 Patterson Office Tower, Lexington, KY 40506.

Toric g -Vectors of Convex Polytopes from Gale Diagrams. Preliminary report.

If P is a convex d -polytope with n vertices, then the combinatorial structure of P can be represented by a certain set of n points in \mathbf{R}^e (a Gale diagram), where $e = n - d - 1$. Associated with P is its flag- f -vector, which enumerates the numbers of chains of faces of the various possible types. The toric g -vector is a certain linear transformation of this vector. For simplicial polytopes, Lee defined the winding number w_k in a Gale diagram corresponding to a given polytope. He showed that w_k in the Gale diagram equals g_k of the corresponding polytope. We will extend these results to many non-simplicial cases by explaining how to determine g_k of the polytope by only considering the corresponding Gale diagram. In particular, we determine g_k for every possible Gale diagram in dimension 2. (Received September 22, 2015)