

1077-05-2099

Margaret M Bayer* (bayer@math.ku.edu) and **William Espenschied**
(wespens@math.ku.edu). *Graphs of Polytopes*. Preliminary report.

A well-known theorem of Steinitz says that a graph G is the graph of a 3-dimensional polytope if and only if G is planar and 3-connected. No such characterization is known for the graphs of convex polytopes of higher dimensions. In this talk, we discuss old and new results about graphs of polytopes of dimension four and higher. We look at the issue of dimensional ambiguity: the graph of a polytope of dimension d can at the same time be the graph of polytopes of other dimensions. For example, we describe polytopes of dimensions up to $3d/2$ having the same graph as the d -dimensional crosspolytope. The Gale diagram of a polytope is one tool used. (Received September 21, 2011)