

Edges of symmetric edge polytopes and their Ehrhart theory

The symmetric edge polytope of a simple graph is a centrally symmetric lattice polytope defined in terms of the edges of the graph. These polytopes appear in different mathematical contexts and recently have attracted attention as a family with interesting Ehrhart theoretic properties.

We will discuss a sharp lower bound for the number of edges of symmetric edge polytopes, expressed only in terms of invariants of the graph. We will then highlight a connection with the h^* -polynomial of such polytopes, and in particular, discuss implications for their conjectured Γ -positivity.