
GEORGE MANOUSSAKIS, Université Paris Saclay

Minkowski Sums : Diameters and Holes

We investigate a family of Minkowski sums of integer vector associated to graphs. We show that this family yields a lower bound for the largest edge-graph diameter of the convex hull of integer-valued points. The lower bound is obtained via classical results concerning the number of disjoint perfect matchings of the complete graph. We discuss the problem of finding holes in a Minkowski sum of integer vectors; that is, whether there exists or not an integer-valued point in the Minkowski sum which cannot be expressed as a subsum of the integer vectors generating the Minkowski sum. This problem is related to a question dealing with the convex hull of degree sequences of k -uniform hyper graphs. Related complexity questions are also presented.