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Quadratic embedding constants of graphs

Abstract

The quadratic embedding constant of a finite connected graph G , denoted by $\text{QEC}(G)$, is by definition the maximum of the quadratic function associated to the distance matrix on a certain sphere of codimension two. We show some basic properties and typical examples of QE constants and propose a program of classifying finite connected graphs along with the increasing scale

$$-1 = \text{QEC}(P_2) < \text{QEC}(P_3) < \cdots < \text{QEC}(P_n) < \cdots < -1/2.$$

Some preliminary results will be reported.