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Stretch Hamming Dimension of Graphs

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The *stretch embedding* of a graph G into a metric space (M, d) is a function f from the vertex set of G to the set M such that for every pair $u, v \in V(G)$ we have $d_G(u, v) \leq d(f(u), f(v))$, in which d_G is the shortest distance metric over $V(G)$.

When (M_m, d_H) is the space of all binary sequences of length m equipped with the Hamming metric, then any stretch embedding to (M_m, d_H) is called a *Hamming stretch embedding* of G. The minimum value of m such that a Hamming stretch embedding to (M_m, d_H) exists is called the *stretch Hamming dimension of* G.

In this talk, we present both exact and approximate results concerning the stretch Hamming dimension of graphs, along with some applications in graph metric codes, particularly in Lee metric codes.