Computing spectral bounds for geometric graphs via polynomial optimization

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Abstract

The spectral bound is a powerful tool providing lower bounds on the chromatic number of (possibly infinite) graphs. It can be computed by optimizing the Fourier transform of measures supported on the adjacency set of the graph. For discrete measures, this optimization problem can be turned into a polynomial optimization problem. In this talk, we will describe several contexts in which such methods can be applied, and how to (try to) take advantage of symmetry under the action of Weyl groups when the situation allows it.