

Jerry Griggs

“Channel Assignments for Infinite Graphs”

Generalized graph coloring problems arise in connection with efficient channel assignments for networks of radio transmitters, when conditions are imposed due to different levels of interference. Such a network is represented by a simple graph G , which may be infinite. Avoiding interference leads to minimum separation requirements for channels at nearby vertices. We consider vertex labellings of G by real numbers that minimize the span of the labels used.

The optimal span is now completely determined for conditions at distance two for the square lattice and the hexagonal lattice. For another important network in applications, the triangular lattice, we have determined the optimal span for conditions at distance two, provided the required separation at distance one is larger than at distance two. We report on recent progress developing the general theory for infinite graphs of bounded maximum degree.