

The Chromatic Number and the Crossing Number

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Abstract

This talk will give a highlights tour of recent results and open questions that relate the chromatic number and crossing number of a graph. For instance, given a drawing of a graph G , two crossings are said to be *dependent* if they are incident with the same vertex. A set of crossings is *independent* if no two are dependent. We conjecture that if G is a graph that has a drawing all of whose crossings are independent, then $\chi(G) \leq 5$. This conjecture is true when $\text{cr}(G) \leq 3$. We do know that if all crossings are independent, then $\chi(G) \leq 6$, and the independence ratio of G is at least $\frac{3}{16}$.