

Colouring with Conditions on Distances

Daniel A. Quiroz
London School of Economics and Political Science

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A natural generalisation of the chromatic number comes from requiring vertices to have a different colour if they have distance at most p . In this context, it is clear that upper bounds on the number of colours depend on the maximum degree of the graph. A lot of work has been done on this topic, in particular around Wegner's conjecture for planar graphs and distance 2. The situation changes if we require vertices to have a different colour if they have distance exactly p . For that type of colouring, the answer to the question "how many colours are needed?", depends greatly on the parity of p . In the talk I give an overview of work that has been done on these types of colouring, and will discuss in more detail our new results on colouring at distance exactly p . Joint work with Jan van den Heuvel and H.A. Kierstead.