

An improved bound for the List Colouring Conjecture

Michael Molloy
University of Toronto

Abstract

The List Colouring Conjecture posits that the list edge chromatic number of any graph is equal to the edge chromatic number, and thus is at most $D+1$ where D is the maximum degree. This means that if each edge is assigned a list of $D + 1$ colours then it is always possible to obtain a proper edge colouring by choosing one colour from each list.

In the 1990's, Khan proved that one can always obtain a proper edge colouring from lists of size $D + o(D)$, then Molloy and Reed obtained $D + D^{1/2}\text{poly}(\log D)$. We improve that bound to $D + D^{2/5}\text{poly}(\log D)$