List distinguishing index of graphs

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An edge colouring of a graph is called distinguishing if there is no non-trivial automorphism which preserves it. Distinguishing colourings gained quite a lot of attention since 1990s, and are still extensively studied. The most notable recent result in this area is the confirmation by Babai of the Infinite Motion Conjecture proposed by Tucker.

The talk will be about the list variant of this problem. We will present a general bound of $\Delta(G)-1$ for all connected graphs apart from some classified exceptions. This bound is optimal and it matches the best known bound for non-list colourings.

Then, we will discuss an improvement of the result of Lehner, Pilśniak, and Stawiski, which states that there is a distinguishing 3-edge-colouring of any connected regular graph except K_2. We prove that every at most countable, finite or infinite, connected regular graph of order at least 7 admits a distinguishing edge colouring from any set of lists of length 2.

References

[1] J. Kwaśny, M. Stawiski, *Distinguishing regular graphs from lists*, arXiv:2207.14728.

[2] J. Kwaśny, M. Stawiski, *List distinguishing index of graphs*, arXiv:2306.06418.