Linear colorings of graphs

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Motivated by algorithmic applications, Kun, O'Brien, Pilipczuk, and Sullivan [2] introduced the parameter linear chromatic number as a relaxation of treedepth and proved that the two parameters are polynomially related. They conjectured that treedepth could be bounded from above by twice the linear chromatic number. We investigate the properties of linear chromatic number and provide improved bounds in several graph classes (see [1]).

References

[1] C. Hilaire, M. Krnc, M. Milanič, J.-F. Raymond. Linear colorings of graphs. Preprint, 2025. `https://arxiv.org/abs/2505.02768`.

[2] J. Kun, M. P. O'Brien, M. Pilipczuk, and B. D. Sullivan, Polynomial treedepth bounds in linear colorings, *Algorithmica* 83 (2021) 361–386.