



## SEMINARIUM MATEMATYKA DYSKRETNA

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### ON A COMBINATION OF 1–2–3 CONJECTURE, AND ANTIMAGIC LABELLING

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(joint work with Julien Bensmail and Kasper Szabo Lungsie)

This talk will try to answer the following question: Is it always possible to injectively assign the weights  $1, \dots, |E(G)|$  to the edges of any given graph  $G$  (with no component isomorphic to  $K_2$ ) so that every two adjacent vertices of  $G$  get distinguished by their sums of incident weights? One may see this question as a combination of the well-known 1-2-3 Conjecture and the Antimagic Labelling Conjecture.

Throughout this talk, we exhibit evidence that this question might be true. Benefiting from the investigations on the Antimagic Labelling Conjecture, we first point out that several classes of graphs, such as regular graphs, indeed admit such assignments. We then show that trees also do. Towards a general answer to the question above, our results claims that such assignments can be constructed for any graph, provided we are allowed to use some number of additional edge weights. For some classes of sparse graphs, namely 2-degenerate graphs and graphs with maximum average degree 3, we show that only a small (constant) number of such additional weights suffices.

**Keywords:** 1–2–3 Conjecture, Antimagic Labelling Conjecture, equitable edge-weightings, neighbour-sum-distinguishing edge-weightings.