Strong vertex in-out-antimagic total labeling of digraphs

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In a recent paper "On Vertex In-out-antimagic Total Digraphs" by Bača, Kovář, Kovářová, and Semaničová-Feňovčíková the authors explored the concept of a total labeling of a digraph (V, A) by distinct integers $1, 2, \ldots, |V| + |A|$ such that the vertex in-weights obtained as the sum of the vertex label and all incoming arcs are pairwise different and at the same time all the vertex out-weights obtained as the sum of the vertex label and all outgoing arcs are pairwise different.

If all the in-weights and out-weights are pairwise simultaneously, such labeling is called strong. While a conjecture states that all digraphs but two allow the vertex in-out-antimagic total labeling, there are infinitely many digraphs that do not allow the strong version of the labeling.

In this talk we explore the strong vertex in-out-antimagic total labeling some more, we show that several sparse digraph classes allow such labeling.

The talk is based on joint work with Nikola Kubeczková.

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