ON A-CORDIAL CATERPILLARS[1]

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Hovey introduced A-cordial labelings as a generalization of cordial and harmonious labelings [3]. If A is an Abelian group, then a labeling $f\colon V(G) \to A$ of the vertices of some graph G induces an edge labeling on G; the edge uv receives the label $f(u) + f(v)$. A graph G is A-cordial if there is a vertex-labeling such that (1) the vertex label classes differ in size by at most one and (2) the induced edge label classes differ in size by at most one.

In the literature, mostly cordial labeling in cyclic groups is studied. There is a famous (still open) conjecture which states that all trees are $\mathbb{Z}_k$-cordial for all k [3]. The situation changes a lot if A is not cyclic. It was proved that all trees, except P_4 and P_5, are $\mathbb{Z}_2^2$-cordial [1].

Patrias and Pechenik posed a conjecture that for every group A there is an A-cordial labeling for almost every path [4]. Erickson et al. extended the conjecture for all trees [1].

In the talk, we show that the conjecture holds for paths [2] but it is not true for general trees - even if we consider an A-rainbow coloring instead of A-cordial (i.e. an A-cordial labeling in which $|A| = |V(G)|$) of caterpillars. Moreover, we will show some correspondence of A-cordial caterpillars and Cayley digraphs on A.

References

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[1]joint work with Barbara Krupińska and Mariusz Woźniak