

Product Cordial Sets of Grids $P_m \times P_n$

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Let G be a graph, and $f : V(G) \rightarrow \mathbb{Z}_2$ be a binary vertex coloring (labeling) of G . For $i \in \mathbb{Z}_2$, let $v_f(i) = |f^{-1}(i)|$. The coloring f is said to be *friendly* if $|v_f(1) - v_f(0)| \leq 1$. That is, the number of vertices colored 0 is almost the same as the number of vertices colored 1.

Any friendly vertex coloring $f : V(G) \rightarrow \mathbb{Z}_2$ induces an edge labeling $f^* : E(G) \rightarrow \mathbb{Z}_2$ defined by $f^*(xy) = f(x)f(y) \forall xy \in E(G)$. For $i \in \mathbb{Z}_2$, let $e_f(i) = |f^{*-1}(i)|$ be the number of edges of G that are labeled i . The number $pc(f) = |e_f(1) - e_f(0)|$ is called the *product-cordial index* (or *pc-index*) of f . The *product-cordial set* (or *pc-set*) of the graph G , denoted by $PC(G)$, is defined by

$$PC(G) = \{pc(f) : f \text{ is a friendly vertex coloring of } G\}.$$

In this talk we present the product-cordial sets of grids $P_m \times P_n$.