

**CORDIALITY IN THE PATH UNION OF VERTEX SWITCHING
OF CYCLES IN INCREASING ORDER**

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Abstract: The *Cordial labeling* of a graph G is a function $f : V(G) \rightarrow \{0, 1\}$ such that each edge uv in G is assigned the label $|f(u) - f(v)|$ with the property $|v_f(0) - v_f(1)| \leq 1$ and $|e_{f^*}(0) - e_{f^*}(1)| \leq 1$, where $v_f(i)$ for $i = 0, 1$ denote the number of vertices with label i and $e_{f^*}(i)$ for $i = 0, 1$ denote the number of edges with label i . The graph which admits cordial labeling is called the *Cordial graph*. In this paper, we prove that the path union of vertex switching of cycles in increasing order is cordial.

Keywords and Phrases: Cordial labeling, Path union, Vertex switching.

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1. Introduction

Graph labeling methods trace their origin to the graceful labeling introduced by Rosa [7] in 1967. For the past five decades variations in labeling methods have evolved. One such labeling method is the cordial labeling introduced by Cahit [4] in 1987. The *Cordial labeling* of a graph G is a function $f : V(G) \rightarrow \{0, 1\}$ such that each edge uv in G is assigned the label $|f(u) - f(v)|$ with the property that $|v_f(0) - v_f(1)| \leq 1$ and $|e_{f^*}(0) - e_{f^*}(1)| \leq 1$, where $v_f(i)$ for $i = 0, 1$ denote the number of vertices with label i and $e_{f^*}(i)$ for $i = 0, 1$ denote the number of edges with label i . The graph which admits cordial labeling is called the *Cordial graph*. Various graphs are shown to be cordial. Andar et al. [1,2,3] have proved that the helms, closed helms, flowers, gears and sunflower graphs and multiple shells are