Review of Research Papers Related to $V_4$-cordial Labeling of Graphs

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Concise Summary:
Authors: M. Seenivasan & A. Lourdusamy.

In this research paper authors investigate a necessary condition for an Eulerian graph to be $V_2$-cordial. They also proved that all trees except $P_4$ and $P_5$ are $V_2$-cordial and the cycle $C_n$ is $V_r$-cordial, $n \neq 4$ or $n$ does not congruent to $2 (mod 4)$.

Evaluation of Paper:

1. Positive Aspects:
(i) All the figures are very nicely drawn so any one can understand easily.
(ii) The proof of Theorem 2.4 “Let $f$ be a $V_2$-cordial labeling of a graph $G$ with $P_4$ and $uv$ be an edge of $G$ such that $f(u) = 0$ and $f(u) = f(v).$” is very useful to find some more graphs which admits $V_2$-cordial labeling and also this proof can be used for finding $V_2$-cordiality of generalized graph of any graph.

2. Negative Aspects:
(i) The proof of Lemma 2.6 “If all trees on $4m$ vertices are $V_2$-cordial then all trees on $4m+1, 4m+2, 4m+3$ vertices are also $V_2$-cordial.” contains very less explanation and not given any illustration so it’s very difficult to understand.
(ii) The proof of Theorem 2.7 “All trees except $P_4$ and $P_5$ are $V_2$-cordial.” is divided into two cases. In each case the explanation is difficult and authors are not given any illustrations so it is very difficult to understand the proof.

3. Discrepancy:

In Corollary 2.3 “The cycle $C_n$ is not $V_2$-cordial, where $n \neq 2 (mod 4)$, the generalized Peterson graph $P(n,k)$, where $n \neq 2 (mod 4)$ and $C_m \times C_n$, where $m$ and $n$ are odd are not $V_2$-cordial.” there is no given any proof about $V_2$-cordiality of Peterson graph $P(n,k)$ and $C_m \times C_n$.

Further comments:
(i) The authors use $V_r$-cordiality and this labeling is such a nice combination of group theory and graph theory. This labeling can be used in application of abstract algebra in graph theory.
(ii) The authors give the proof of $V_2$-cordial labeling of standard graphs Path and cycle. By using these graphs there may be found more graphs which may contain $V_2$-cordiality.
(iii) Authors should have to give some illustration so anyone can understand.

Review of a Research Paper entitled, “Generalized Graph Cordiality”

Concise Summary:
Authors: O. Pechenik & J. Wise.
Published in: Discussiones Mathematicae Graph Theory, Vol. 32(3) (2012), 557-667.

In this paper authors investigate some $A$-cordial graphs, $V_2$-cordial graphs and $Q$-cordial graphs. Authors proved the following results. All complete bipartite graphs are $V_2$-cordial except $K_{m,m}$, where $m \neq 2 (mod 4)$. All Paths $P_n$ are $V_2$-cordial except $P_4$ and $P_5$. All cycles $C_n$ are $V_2$-cordial except $C_4$, $C_5$ and $C_6$, where $k \neq 2 (mod 4)$. All ladders $P_2 \times P_k$ are $V_2$-cordial except $C_2$. All prisms are $V_2$-cordial except $P_2 \times C_4$, where $k \neq 2 (mod 4)$. All hypercube are $V_2$-cordial, except $C_4$.

Evaluation of Paper:

1. Positive Aspects:
In this paper authors proved all ladders $P_2 \times P_k$ and all prisms $P_2 \times C_4$ are $V_2$-cordial. These graphs ladders and prisms are obtained by operation on standard graphs, which is very hard, but the authors make it very easy.

2. Negative Aspects:
(i) In Theorem 3.4 authors proved that the path $P_n$ is $V_2$-cordial unless $n \neq 4, 5$. They proved this result by induction on $n$. But in 2009 Seenivasan and Lourdusamy[4] have been already proved that all trees except $P_4$ and $P_5$ are $V_2$-cordial and path $P_n$ is one type of tree.
In theorem 3.5 authors proved that the cycle $C_n$ is $V_4$-cordial for $n$ does not congruent to $2(\mod 4)$ and $n \neq 4, 5$. But Seenivasan and Lourdusamy [4] have been already given a proof for $V_4$-cordiality of cycle $C_n$.

In this paper all symbols of graph operation do not appear properly.

The authors prove that the $d$-dimensional hypercube $Q_d$ is $V_4$-cordial, but the authors have not been introduced the definition of $d$-dimensional hypercube $Q_d$.

Further comments:
(i) This paper contains three types of labeling defined as $A$-cordial labeling, $V_4$-cordial labeling and $Q$-cordial labeling. Using this combination of labeling authors can see the behavior of graphs in different labeling.

(ii) Authors must have to give the definitions of new words.

REFERENCES