



**Corrections to the JGAA Paper
“Maximal Neighborhood Search
and Rigid Interval Graphs”
by Peng Li and Yaokun Wu**

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Abstract

In the recently published paper, “Peng Li and Yaokun Wu, Maximal Neighborhood Search and Rigid Interval Graphs, Journal of Graph Algorithms and Applications vol. 17, no. 3, pp. 245-264 (2013)”, several results are proved under the implicit assumption that the graphs in consideration are connected even though the connectedness assumption does not appear in the statement of the results. We correct all these statements in this short notice. We also report the connection of our work to a paper of Ibarra which we notice only after the above paper is published.

This erratum has been published on October 2013.

This short notice is to report corrections and comments on our paper “Peng Li and Yaokun Wu, Maximal Neighborhood Search and Rigid Interval Graphs, Journal of Graph Algorithms and Applications vol. 17, no. 3, pp. 245-264 (2013).”

Here are corrected versions of some results in the paper. Those appeared in boldface are new inputs.

- Theorem 4 Let G be a **connected** graph with m maximal cliques. (i) If a path $[\mu_1, \dots, \mu_m]$ is the unique clique tree of G , then any ordering τ of $V(G)$ which is compatible with μ must be an RI-ordering. (ii) If G has an RI-ordering τ , then G is a rigid interval graph and has a clique path $[\mu_1, \dots, \mu_m]$ such that $\tau_1 \in \mu_1 \setminus \mu_2$.
- Theorem 8 The algorithm 2MNS-UI/RI^A outputs a UI-ordering when the input is a connected unit interval graph and outputs an RI-ordering when the input is a **connected** rigid interval graph.
- Theorem 9 The algorithm 3MNS-UI/RI^A outputs a UI-ordering when the input is a connected unit interval graph and outputs an RI-ordering when the input is a **connected** rigid interval graph.
- Theorem 10 Let G be a **connected** rigid interval graph on n vertices and let δ , σ , and τ be the three orderings of G generated by 3MNS-UI/RI^A(G) based on an MNS type algorithm \mathcal{A} . Then τ is an output of the algorithm $\mathcal{A}^\Delta(G, \sigma_n)$.
- Theorem 11 Let G be a graph on n vertices. Then G is a **connected** rigid interval graph if and only if it has two consecutive orderings τ and ρ such that τ is an I-ordering, ρ is an MNS ordering and $\rho_1 = \tau_n$.

We want to point out that all rigid chordal graphs are connected unless they are the disjoint unions of two complete graphs. This means that restricting rigid chordal graphs to connected rigid chordal graphs in Theorems 4, 8, 9, 10 and 11 only excludes the consideration of those graphs which are disjoint unions of two complete graphs. Note that our several algorithms proposed in the paper explicitly require the input to be connected graphs, which is one reason the connectedness assumption should be added. Also note that a graph with a consecutive ordering must be connected, which makes it obvious that above statements without the connectedness assumption must be false.

Our original Lemma 3 is mathematically correct. But to make it read better and to help the understanding of the readers, we suggest the following version. Those marked in boldface are new inputs.

- Lemma 3 **Let m be an integer no less than 3**, let G be a graph with m maximal cliques and **let μ be an ordering of $\mathcal{C}(G)$ such that $[\mu_1, \dots, \mu_m]$ is a clique path of G** . (i) If an ordering τ of $V(G)$ is both consecutive and left-compatible with μ , then $(\mu_{i+1} \cap \mu_{i+2}) \setminus \mu_i \neq \emptyset$ for every $i \in [m-2]$. (ii) If G has a PSO τ which is left-compatible with μ , then $(\mu_i \cap \mu_{i+1}) \setminus \mu_{i+2} \neq \emptyset$ for every $i \in [m-2]$.

In the following two places, we better modify the proof by emphasizing how the connectedness assumption is used. The parts in boldface are new inputs.

- Line 5 in the proof of Theorem 4: "as G is a rigid interval ..." should be "as G is a **connected** rigid interval ..."
- Line 12 in the proof of Theorem 4: "Because G is a rigid interval graph ..." should be "Because G is a **connected** rigid interval graph ..."

Finally, we mention a related reference.

- Theorem 3 in our paper gives a characterization of rigid chordal graphs. We observe that Lemma 9 in the following paper
L. Ibarra, The clique-separator graph for chordal graphs, *Discrete Applied Mathematics* 157 (2009) 1737–1749
gives a characterization of connected rigid chordal graphs and is basically equivalent to our Theorem 3, though the proof in the two papers adopt different approaches.