CORRIGENDUM TO: "RANK-WIDTH AND VERTEX-MINORS"

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Abstract. We correct a slight minor mistake in the proof of Lemma 5.3 in the article "Sang-il Oum. Rank-width and vertex-minors. *J. Combin. Theory Ser. B*, 95(1):79–100, 2005."

In the last paragraph of the proof of Lemma 5.3 on page 95 in [1], I wrote that

> *Let M be the adjacency matrix of G. By submodular inequality (Proposition 4.1), we obtain*
>
> $$\begin{aligned}\operatorname{cutrk}_{G\setminus v}(B) + \operatorname{cutrk}_G(X) &\geq \textit{omitted}\\ &= \operatorname{cutrk}_G(B) + \operatorname{cutrk}_G(X) - 1\end{aligned}$$
>
> *and therefore* $\operatorname{cutrk}_{G\setminus v}(B) = \operatorname{cutrk}_G(B) - 1 = m - 1$.

However, the above inequality does not imply the desired outcome

$$\operatorname{cutrk}_{G\setminus v}(B) = \operatorname{cutrk}_G(B) - 1. \tag{1}$$

Instead we need the following inequality.

$$\begin{aligned}\operatorname{cutrk}_{G\setminus v}(X) + \operatorname{cutrk}_G(B) &= \operatorname{rk}(M[X, V(G) \setminus X \setminus \{v\}]) + \operatorname{rk}(M[B, V(G) \setminus B])\\ &\geq \operatorname{rk}(M[X, V(G) \setminus X]) + \operatorname{rk}(M[B, V(G) \setminus B \setminus \{v\}])\\ &= \operatorname{cutrk}_G(X) + \operatorname{cutrk}_{G\setminus v}(B)\\ &= \operatorname{cutrk}_{G\setminus v}(X) + 1 + \operatorname{cutrk}_{G\setminus v}(B).\end{aligned}$$

It is now obvious that (1) follows.

References

[1] S. Oum. Rank-width and vertex-minors. *J. Combin. Theory Ser. B*, 95(1):79–100, 2005.

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