Erratum

Erratum to “An approximation algorithm for maximum triangle packing”

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We thank Zhi-Zhong Chen (Tokyo Denki University) for drawing our attention to the following typos in our paper.

Lemma 2. (i) In the definition of $E_{\delta,x}$ the term $u \in S$ should be deleted. This term should be added instead to the definitions of $E_C$ and $E_D$. (ii) The numbers attached to the upper vertices of the first graph in the second row of Fig. 7 should be $(0, \frac{1}{2})$ (instead of $(\frac{1}{2}, 0)$).

To facilitate understanding of the proof of Lemma 2 we would like to add the following clarifications: (i) in the stated upper bound on $\hat{w}$, the conditional probabilities are over all possible mappings of the deletion pattern to the cycle with the specified $\delta$ and $x$. (ii) $E_C$ and $E_D$ are the events that $u$ and $v$ are ends of, respectively, a common or a different path in $P$. Since it is possible that $u \notin S$, the sum of probabilities of these events may be less than 1. (iii) The values attached to vertices in Fig. 7 are the values of $P_C$ and $P_D$ given that the specified vertex is mapped to $v$. These values are taken over the (generally) two possible cases for the location of $u$ on the cycle, given that it is at distance $\delta$ from $v$.

Theorem 1. The correct bound is $\frac{43}{83}$. (Note that the bound for the 2-edge path packing does not change.) Some numbers appearing in the proof of Theorem 1 should be changed as follows:

Originally $w(M') \geq (1 - \beta)/3opt$.
Hence $\frac{1}{4} w(M') \geq (1 - \beta)/12opt$.
Hence the added weight is at least $\frac{1}{16} (1 - \beta)$;
Altogether,

$$w(T) \geq \left[\frac{2}{3} x + \frac{3}{4} (1 - x)\right] (1 - \varepsilon)opt + \frac{1}{16} (1 - \beta)opt.$$ 

Hence,

$$w(T P_3) \geq (\frac{13}{24} - \frac{1}{18} x - \frac{1}{24} \beta) (1 - \varepsilon)opt.$$ (1)

It follows that $\max\{w(T P_1), w(T P_2), w(T P_3)\} \geq \frac{43}{83} (1 - \varepsilon)opt$ : if $x > \frac{3}{83}$ then $w(T P_1) > \frac{43}{83} (1 - \varepsilon)opt$, if $\beta > \frac{43}{83}$ then $w(T P_2) > \frac{43}{83} (1 - \varepsilon)opt$, and if neither of these conditions holds then $w(T P_3) > \frac{43}{83} (1 - \varepsilon)opt$. 

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