Erratum to

Random Complexes and ℓ^2-Betti Numbers

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Before the statement of Proposition 3.1, the published version of the paper attributes the Transfer Current Theorem to Pemantle, but it should have been attributed to Burton and Pemantle. The proof of Proposition 4.11 has a slight error. The correct proof follows.

Proof. Let the standard basis elements of $\ell^2(\Gamma \times S)$ be $\{f_{\gamma,s}\,;\ \gamma \in \Gamma, s \in S\}$. Identify $C_1^{(2)}(G)$ with the range in $\ell^2(\Gamma \times S)$ of the map defined by sending the oriented edge $\langle \gamma, \gamma s \rangle$ to the vector $(f_{\gamma,s} - f_{\gamma s, s^{-1}})/\sqrt{2}$. These vectors form an orthonormal basis of the range. Then H becomes identified with a subspace H_S. Write Q for the orthogonal projection of $\ell^2(\Gamma \times S)$ onto H_S. We may choose o to be the identity of Γ. Since $\big(f_{\gamma,s} + f_{\gamma s, s^{-1}}\big) \perp H_S$, we have

$$Qf_{o,s} = -Qf_{s,s^{-1}}\,.$$

Therefore,

$$\begin{aligned}
\mathbf{E}^H[\deg_{\mathfrak{F}} o] &= \sum_{s \in S} \mathbf{P}^H\big[[o,s] \in \mathfrak{F}\big] = \sum_{s \in S} \|Q(f_{o,s} - f_{s,s^{-1}})/\sqrt{2}\|^2 \\
&= \sum_{s \in S} \|\sqrt{2} Q f_{o,s}\|^2 = 2 \sum_{s \in S} (Qf_{o,s},\, f_{o,s}) \\
&= 2 \dim_\Gamma H_S = 2 \dim_\Gamma H\,.
\end{aligned}$$

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In Corollary 6.2, the sum should be over $(k+1)$-cobases, not k-cobases.

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