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CORRECTION

Correction to: Regularized Laplacian determinants of self-similar fractals

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We provide a correction of some formulas. In Proposition 3.1, there is a factor of $\frac{1}{2}$ missing from the spectral zeta function of the diamond fractal. The correct expression is

$$\zeta_{\mathcal{L}}(s) = \frac{4^s(4^s-1)}{6}\left(\frac{4}{4^s-4} + \frac{2}{4^s-1}\right)\zeta_{\Phi,0}(s).$$

The $\frac{1}{2}$ term appears at the following equation found in the proof

$$\zeta_{\Phi,-1}(s) = \sum_{\substack{\Phi(-\mu)=-1\\ \mu>0}} \mu^{-s} = \frac{1}{2}\sum_{\substack{\Phi(-4\mu)=-2\\ \mu>0}} \mu^{-s} = \frac{1}{2}4^s \sum_{\substack{\Phi(-4\mu)=-2\\ \mu>0}} (4\mu)^{-s}$$
$$= \frac{1}{2}4^s\zeta_{\Phi,-2}(s)$$

The original article can be found online at https://doi.org/10.1007/s11005-017-1027-y.

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due to the double multiplicity in the spectral decimation polynomial.

Moreover, the following formulas we used from [1] have a minor typo in that they miss the minus signs. The proper formulation is given by

$$\zeta_{\Phi,w}(0) = 0 \quad \text{and} \quad \zeta'_{\Phi,w}(0) = -\frac{\log a_d}{d-1} - \log(-w)$$

and for $w = 0$

$$\zeta_{\Phi,0}(0) = -1 \quad \text{and} \quad \zeta'_{\Phi,0}(0) = -\frac{\log a_d}{d-1}.$$

This updates our results by replacing all calculations of $\zeta'_{\mathcal{L}}(0)$ with $-\zeta'_{\mathcal{L}}(0)$. Specifically,

(1) In Proposition 3.1, we have that $\det \mathcal{L} = 2^{\frac{5}{9}}$ and in the comment below the proof we have that $\log \det \mathcal{L} = \frac{5}{9}c$ and

$$\log \det \mathcal{L}_n = \frac{1}{5}(-2 \cdot 4^n + 6n + 11) \log \det \mathcal{L}$$

(2) In Proposition 4.1, we have that $\det \mathcal{L} = \frac{2N^{\frac{1}{N-1}}}{(N+2)^{\frac{N-2}{N-1}}}$ and in Corollary 4.1 that

$$\log \det \Delta_n = c|V_n| + n \log(N+2) + \log \det \mathcal{L}$$

(3) In Proposition 5.2, we have that $\det \mathcal{L}_\mu = \frac{1}{pq}$ and in Corollary 5.1 that

$$\log \det \Delta_n = |V_n| \left(\log 2 + \frac{\log(pq)}{2} \right) + n \log \frac{(1-q^2)(1-p^2)}{(pq)^2} + \log \det \mathcal{L}$$

Reference

1. Derfel, G., Grabner, P., Vogl, F.: The zeta function of the Laplacian on certain fractals. Trans. Am. Math. Soc. **360**(2), 881–897 (2008)