Errata to

Unsolved Problems Concerning Random Walks on Trees

Classical and Modern Branching Processes,
K. Athreya and P. Jagers (editors), Springer, New York, 1997, pp. 223–238.

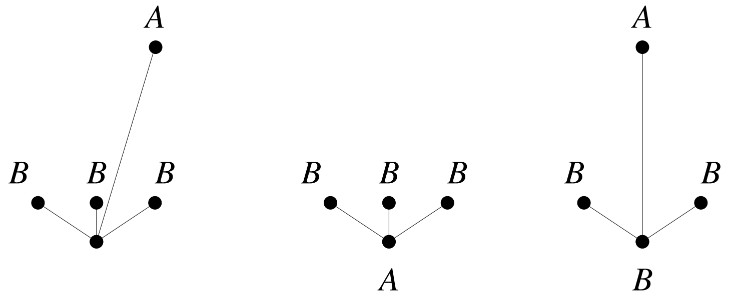
by Russell Lyons, Robin Pemantle, and Yuval Peres

On page 223, transience should be for $\lambda < m$ and recurrence for $\lambda \geq m$; the occurrence at the bottom of the page of "latter" should be "former". On page 225, the description of the binary tree with pipes in Example 2.1 should have that a particle of type 2 has *two* children of type 2, not one. Furthermore, the formula (2.1) given for the speed is wrong. The correct speed is

$$\frac{(2-\lambda)(\lambda-1)}{\lambda^2+3\lambda-3},$$

which is unimodal in λ, maximized at $\lambda = (5+\sqrt{7})/6$, where the speed is $(4-\sqrt{7})/(14+\sqrt{7})$.

Example 2.2, on pp. 225–226, is incorrect. The covering tree of the graph in Fig. 3 is instead described using the following figure:



Three trees are shown, one with root of type A and one with root of type B. In all cases, the long edges are of length 31. The full tree T is obtained by adding a copy of the tree of type A to the leaf of type A in the first tree and a copy of the tree of type B to each of the leaves of type B of the first tree, and repeating *ad infinitum.* The tree T may be viewed as a deterministic, irreducible, multi-type Galton-Watson tree with 33 types. It is still true that the speed of simple random walk on T is less than the speed of $\mathsf{RW}_{4/3}$. The proof is the same as was given, except that the last paragraph should be: "By (2.1), the speed of $\mathsf{RW}_{4/3}$ on the binary tree with pipes is 2/25, which is larger than 1/17. It is easy to see that the speed of $\mathsf{RW}_{4/3}$ on T is even greater than the speed of $\mathsf{RW}_{4/3}$ on the binary tree with pipes."

On page 228, the formulas for $\pi_1(\lambda)$ and $\pi_2(\lambda)$ have a spurious factor of $\sqrt{\lambda+1}$ in their denominators. On page 229, Question 2.2 should restrict λ to be in the open interval $(0, m)$. On page 229, we state that the inequality in Question 2.3 is not valid for general trees; on page 231, we state the same thing about Question 3.5. Both our statements are incorrect. In fact, B. Virág has a 1998 preprint establishing these inequalities. We should have said that Kenyon's examples show that the following strengthening of the inequality in Question 2.3 is not valid for general trees, even for those produced by multitype Galton-Watson processes: $\mathsf{speed}(\lambda, T) \le \mathsf{speed}(\lambda, T^*)$ if T^* is a spherically symmetric tree with the same level sizes as T.

The current electronic version of our paper incorporates all these corrections.

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