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Erratum to: The hitting distributions of a half real line for two-dimensional random walks

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In Theorem 1.1 of my paper [1] (p. 373) there is an erroneous statement. The formula (3) of the theorem expresses the asymptotic form of $H_x^-(s)$, the hitting distribution of the non-positive half line for a random walk on $\mathbf{Z}^2$ started at x. Its first statement, which is true, asserts that (3) holds for $x>0$. The error is included in the second one, in which the validity of (3) is asserted also for $x<0$ under the additional moment condition $E\,[|S^{(1)}|^2 \log |S^{(1)}|]<\infty$. For $x<0$ however, the right-hand side of (3) must be multiplied by the ratio $(|x|+|s|)/2|x-s|$, namely the true statement must read: if $E\,[|S^{(1)}|^2 \log |S^{(1)}|]<\infty$ in addition, then for $x<0$,

$$H_x^-(s) = \frac{\sigma^2}{\pi} \frac{(|x|+|s|)\nu(x)\mu(s)}{2|x-s|^2}(1+o(1)). \tag{3′}$$

The statement of Theorem 1.1 for the case $x<0$ without the additional moment condition remains true, since it imposes a restriction on the manner of $|x-s|$ tending to ∞ that entails either $x/s\to 0$ or $s/x\to 0$, when (3) and (3′) agree.

The formula (3′) is obtained by setting $y=0$ in the formula of Theorem 1.4 (p. 376). Although this special case is excluded in Theorem 1.4, it is verified essentially along the lines preceding it (see Section 5 of [2] for some ingredients of the proof that are not mentioned in [1]).

In addition there are simple errors on p. 376: the factor $(1+o(1))$ is missing from the right-hand sides of (14) and the formula of Theorem 1.4.

The online version of the original article can be found under doi:10.1007/s11512-009-0096-2.

References

1. Uchiyama, K., The hitting distributions of a half real line for two-dimensional random walks, *Ark. Mat.* **48** (2010), 371–393.
2. Uchiyama, K., The hitting distributions of line segments for two dimensional random walks, *Preprint*, 2011. arXiv:1105.5863v1.

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