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CORRECTION

GROWTH PROFILE AND INVARIANT MEASURES FOR THE WEAKLY SUPERCRITICAL CONTACT PROCESS ON A HOMOGENEOUS TREE

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The proof of Theorem 3 in [1] is incorrect, as it relies on a faulty use of the strong Markov property. The theorem asserts that $\beta = \beta(\lambda)$ is strictly increasing in λ for $\lambda < \lambda_2$, where λ is the infection rate parameter for the contact process, λ_2 is the upper critical value (at the transition from weak to strong survival), and $\beta = \lim_{n\to\infty} u_n^{1/n}$ where $u_n =$ probability that a vertex x_n at distance n from the root is ever infected, given that only the root is infected at time $t = 0$. In this note we shall prove the following slightly weaker result.

THEOREM 3′. *If $\beta(\lambda) < 1/\sqrt{d}$ and $\lambda_* < \lambda$ then $\beta(\lambda_*) < \beta(\lambda)$.*

This leaves open the possibility that $\beta(\lambda) = 1/\sqrt{d}$ on an interval $[\lambda_3, \lambda_2]$ of positive length. The proof of Theorem 3′ below relies on the following estimate proved by Schonmann (Theorem 2) in [4]: If $\beta(\lambda) < 1/\sqrt{d}$ then for some constant $0 < C < \infty$ and every integer $n \geq 1$,

$$\frac{\beta(\lambda)^n}{Cn} \leq u_n. \tag{0.1}$$

Schonmann's argument makes essential use of the fact, proved in [1], that $\beta < 1/\sqrt{d}$ implies $\eta < 1$, where $\eta = \lim_{t\to\infty} P\{\text{root} \in A_t\}^{1/t}$.

The proof of Theorem 3′ also uses the following elementary results.

LEMMA 1. *Let $X, X_1, X_2, \ldots$ be independent, identically distributed, positive integer-valued random variables, and let N be a geometrically distributed random variable independent of the random variables $X_1, X_2, \ldots$. Suppose that the probability generating function $\varphi(z) := Ez^X$ is finite for $1 \leq z < R$ and infinite at $z = R$. Then*

$$\limsup_{n\to\infty} P\left\{\sum_{i=1}^{N} X_i > n\right\}^{1/n} > 1/R. \tag{0.2}$$

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