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CORRECTION

A FUNCTIONAL CENTRAL LIMIT THEOREM FOR RANDOM MAPPINGS

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The claim "(8) is bounded between

$$Q_n(1) = \sum_{j=0}^{d_n} c_{j,n} \quad \text{and} \quad Q_n(1)\sqrt{n/(n - n^{T'})}\,(1 + 1/n),$$

and the limit of (8) as $n \to \infty$ equals $\lim_{n\to\infty} Q_n(1)$" on page 326 does not follow from the argument given, since the coefficients in the polynomial $Q_n(z) = \sum_{j=0}^{d_n} c_{j,n} z^j$ are not necessarily of the same sign. However, a simpler proof of the convergence of the finite-dimensional distributions in Case 1 (see page 323) can be given, which avoids the problem mentioned above. This proof is given below.

For $0 \le t < t' < 1$, we show that $(\overline{Y}_n(t), \overline{Y}_n(t') - \overline{Y}_n(t))$ converges weakly to $(Z(t), Z(t'-t))$, where $Z(t)$ and $Z(t'-t)$ are independent normal random variables with mean 0 and variance t and $t'-t$, respectively, by showing that for any $a, b \in \mathbb{R}$, $a\overline{Y}_n(t) + b(\overline{Y}_n(t') - \overline{Y}_n(t))$ converges weakly to $aZ(t) + bZ(t'-t)$ (see [1], Theorem 29.4). We do this by using the method of moments, i.e., we show that for any integer $r > 0$,

$$\lim_{n\to\infty} E_n\big(a\overline{Y}_n(t) + b\big(\overline{Y}_n(t') - \overline{Y}_n(t)\big)\big)^r = E\big(aZ(t) + b\big(Z(t') - Z(t)\big)\big)^r.$$

Let r be fixed but arbitrary, and let

$$\mu_n(z) = \sum_{k=1}^{n^t} \left(\frac{A_k}{k!}\right)\left(\frac{z}{e}\right)^k$$

and

$$\tilde{\mu}_n(z) = \sum_{k>n^t}^{n^{t'}} \left(\frac{A_k}{k!}\right)\left(\frac{z}{e}\right)^k.$$

It follows from (6), page 322, that

$$\begin{aligned} &E_n\big(a\overline{Y}_n(t) + b\big(\overline{Y}_n(t') - \overline{Y}_n(t)\big)\big)^r \\ &\quad = \big[(z_n)^n\big]\frac{n!\,e^n}{n^n} S\left(\frac{z_n}{e}\right) E_{z_n}\big(a\overline{Y}_n(t) + b\big(\overline{Y}_n(t') - \overline{Y}_n(t)\big)\big)^r \\ &\quad = \big[(z_n)^n\big]\frac{n!\,e^n}{n^n} S\left(\frac{z_n}{e}\right) \sum_{k=0}^{r} \binom{r}{k} a^k b^{r-k} E_{z_n}\big(\overline{Y}_n(t)\big)^k E_{z_n}\big(\overline{Y}_n(t') - \overline{Y}_n(t)\big)^{r-k}. \end{aligned}$$

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