CORRECTIONS

ON APPLICATIONS OF EXCESS LEVEL PROCESSES TO (N,D)-POLICY BULK QUEUEING SYSTEMS

JEWGENI H. DSHALALOW

Department of Applied Mathematics
Florida Institute of Technology
Melbourne, FL 32901, U.S.A.
e-mail: eugene@winnie.FIT.edu

In the above paper, published in the Journal of Applied Mathematics and Stochastic Analysis [1], several formulas and phrases are found to be erroneous. Although the listed below corrections fix the problems, the full corrected version reads better and is now available as a technical report [2].

Correction 1. Page 553, lines 13-19 should become:

such that for each n, \((X_n, Y_n)\) depend only on the nth interenewal time \(\tau_n - \tau_{n-1}\).

Consequently,

\[
(A, B, \tau) = \{(A_n = \sum_{k=0}^{n} X_k, B_n = \sum_{k=0}^{n} Y_k, \tau_n); n = 0, 1, \ldots\} \quad (2.2)
\]

is a three-dimensional delayed renewal process.

Process \(Z\) will be described in terms of the following transformations:

\[
\gamma_0(z, \theta, \theta) = \mathbb{E}[z e^{-\theta Y_0} e^{-\theta \tau_0}], \quad \gamma(z, \theta, \theta) = \mathbb{E}[z e^{-\theta Y_1} e^{-\theta (\tau_1 - \tau_0)}],
\]

\[
|z| \leq 1, \quad Re(\theta) \geq 0, \quad Re(\theta) \geq 0, \quad (2.3)
\]

\[
\alpha_0(z) = \gamma_0(z, 0, 0), \quad \alpha(z) = \gamma(z, 0, 0), \quad (2.4)
\]

\[
\gamma_0(z, \theta) = \gamma_0(z, \theta, 0), \quad h_0(\theta) = \gamma_0(1, 0, \theta), \quad \gamma(z, \theta, 0), \quad h(\theta) = \gamma(1, 0, \theta), \quad (2.5)
\]

Correction 2. Theorem 1 on page 554, lines 14-15, should be restated as follows:

Theorem 1. Let \((X_n, Y_n)\) be independent of \(\tau_n - \tau_{n-1}\) for each \(n\). Then,

\[
\frac{1}{h_0(\theta)} T^*(\xi, \theta, z, \theta; x, s) = \gamma_0(z, \theta) - \gamma_0(xz, \theta + s) \frac{1 - \xi h(\theta) \gamma(z, \theta)}{1 - \xi \gamma(xz, \theta + s)}. \quad (2.16)
\]

Insert 3. Following Theorem 1, we add Theorem 1a:

Theorem 1a. With no above assumption on the independence,

\[
T^*(\xi, \theta, z, \theta; x, s) = \gamma_0(z, \theta) - \gamma_0(xz, \theta + s, \theta) \frac{1 - \xi \gamma(xz, \theta + s, \theta)}{1 - \xi \gamma(xz, \theta + s, \theta)}. \quad (2.16a)
\]
Correction 4. Page 559, lines 10-12 should read:

\[
\gamma(z,\vartheta,\theta) = \mathbb{E}[\xi \mathcal{L}^*_{1e} - \partial Y_{1e}^* - \theta(\tau_1 - \tau_0)]
\]

\[
= \mathbb{E}[\mathbb{E}[\mathbb{E}[\xi \mathcal{L}^*_{1e} - \partial Y_{1e}^* - \theta(\tau_1 - \tau_0) | X_1^*] | \tau_1 - \tau_0]
\]

\[
= \varphi\{\theta + \lambda[1 - \alpha(z\beta(\vartheta))}\}. \tag{6.2}
\]

The three-dimensional benchmark process, to which the busy period policy is applied, is now

\[
(A,B,\tau) = \{(A_n = \sum_{k=0}^{n} X_k^*, B_n = \sum_{k=0}^{n} Y_k^*, \tau_n); n = 0,1,\ldots\}. \tag{6.3}
\]

Correction 5. Page 559, line 16 should be corrected as

... the marginal transformation \(\gamma(z,0,0)\) satisfies formula (6.1).

Correction 6. Page 559, lines 18-19 should read:

\[
\mathbb{E}^0[\xi^T_{n}e - \theta_T^T_{n}x^A_T] = 1 - \left[1 - \xi\varphi\{\theta + \lambda(1 - \alpha(z))\}\right]\mathbb{E}_D^N - 1 \left\{\frac{1}{1 - \xi\varphi\{\theta + \lambda(1 - \alpha(z\beta(s))\}}\right\}. \tag{6.4}
\]

References


Submit your manuscripts at http://www.hindawi.com