STOHASTIČKI PROCESI

(1) MMk rep

(i)

$$\pi_i = \begin{cases} \frac{c}{i!}\left(\frac{\lambda}{\mu}\right)^i, & 0 \leqslant i \leqslant k \\ \frac{c}{k!k^{i-k}}\left(\frac{\lambda}{\mu}\right)^i, & i \geqslant k. \end{cases},$$

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$$c^{-1} = \sum_{i=0}^{k} \frac{1}{i!}\left(\frac{\lambda}{\mu}\right)^i + \frac{1}{(k-\frac{\lambda}{\mu})k!}\left(\frac{\lambda}{\mu}\right)^{k+1}.$$

(ii)

$$L = \lambda W, \quad L_r = \lambda W_r \quad \text{i} \quad L_u = \lambda W_u$$

(iii)

$$L = \frac{\lambda}{\mu}\left(1 + \frac{\left(\frac{\lambda}{\mu}\right)^k c}{\left(k-\frac{\lambda}{\mu}\right)^2 (k-1)!}\right), \quad L_r = \frac{\lambda}{\mu}\frac{\left(\frac{\lambda}{\mu}\right)^k c}{\left(k-\frac{\lambda}{\mu}\right)^2 (k-1)!} \quad \text{i} \quad L_u = \frac{\lambda}{\mu}.$$

(2) MM1 rep

(i)

$$\pi_i = \left(1-\frac{\lambda}{\mu}\right)\left(\frac{\lambda}{\mu}\right)^i, \quad i \geqslant 0,$$

(ii)

$$L = \frac{\lambda}{\mu-\lambda}, \quad L_r = \frac{\lambda^2}{\mu(\mu-\lambda)} \quad \text{i} \quad L_u = \frac{\lambda}{\mu}.$$

(3) MM∞ rep

(i)

$$\pi_i = \frac{\left(\frac{\lambda}{\mu}\right)^i}{i!} e^{-\frac{\lambda}{\mu}}, \quad i = 0, 1, 2, \ldots$$

(ii)

$$L_r = W_r = 0.$$