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## A Method of Routing Control in Queueing Networks with Changing Topology

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Closed exponential queueing networks with changing topology are considered. A method of routing control in given type queueing networks is proposed.

*Key words:* queueing networks, changing topology, routing control, reliability.

### References

1. Dijk N. M. van. Analytic comparison results for communication networks. *Computer Communications*, 1998, vol. 21, pp. 1495–1508.
2. Chao X. A queueing network model with catastrophes and product form solution. *Operations Research Letters*, 1995, vol. 18, pp. 75–79.
3. Sauer C., Daduna H. BCMP networks with unreliable servers. Preprint no. 2003-01, *Schwerpunkt Mathematische Statistik und Stochastische Prozesse*, Universität Hamburg. 2003.
4. Tananko I. E. A method of optimal routing control in queueing networks with variable configuration. *Automatic Control and Computer Sciences*, 2006, vol. 40, no. 3, pp. 71–77.
5. Tananko I. E. About of queueing networks with changing number of queues. *Izv. Sarat. Univ. N.S. Ser. Math. Mech. Inform.*, 2005, vol. 5, iss. 1, pp. 138–141 (in Russian).
6. Chakka R., Mitrani I. Approximate solutions for open networks with breakdowns and repairs. *Stochastic Networks – Theory and applications*. Eds. F. P. Kelly, S. Zachary, I. Ziedins. Oxford, Clarendon Press, 1996, Ch. 16, pp. 267–280.
7. Vinod B., Altioik T. Approximating unreliable queueing networks under the assumption of exponentiality. *J. Opl. Res. Soc.*, 1986, vol. 37, no. 3, pp. 309–316.
8. Dijk N. M. van. Bounds and error bounds for queueing networks. *Annals of Operations Research*, 1998, vol. 79, pp. 295–319.
9. Thomas N., Thornley D., Zatschler H. Approximate solution of a class of queueing networks with breakdowns. *Proc. of 17-th European Simulation Multiconference*, Nottingham, UK, 9–11 June 2003. Delft, Netherlands, SCS-European Publishing House, 2003, pp. 251–256.
10. Bambos N., Michailidis G. Queueing networks of random link topology : stationary dynamics of maximal throughput schedules. *Queueing Systems*, 2005, vol. 50, pp. 5–52.
11. Tassiulas L. Scheduling and performance limits of networks with constantly changing topology. *IEEE Transactions on Information Theory*, 1997, vol. 43, no. 3, pp. 1067–1073.
12. Mitrophanov Yu. I. *Sintez setej massovogo obsluzhivaniya* [Synthesis of queueing networks]. Saratov, Sarat. Univ. Press, 1995, 184 p. (in Russian).
13. Tananko I. E. A method for optimization of routing matrices for open queueing networks. *Automatic Control and Computer Sciences*, 2002, vol. 36, no. 4, pp. 39–46.