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ESTIMATION OF THE RELIABILITY OF COMPLEX INFORMATION SYSTEMS WITH CROSS COUPLING

The problems of evaluation of complex telecommunication- information systems with a plurality of cross communications are examined. A new approach to an analytical evaluation of the reliability was proposed including presentation of complex systems as a circuit of equivalent blocks. The proposed approach allows derivation of the function of the system- failure distribution in an analytical form and determination of the dependency of failure intensities on the failure time as well as a significant simplification of the preliminary reliability evaluation at the stage of the research analysis of the system and formulation of economical requirements for parameters of developed systems.

Keywords: reliability, complex telecommunication-information systems, analytical evaluation, functions of distribution of system failure, failure time.

- 1. Kovalev A. P. Analysis and computations of reliability of complex structures using PC (in Russian) / A. P. Kovalev, A.V. Solenyi. http://masters.donntu.edu.ua/2011/etf/soleniy/library/
- Ostreykovsky V. A. The Reliability Theory: Manual for Institutes of Higher Education (in Russian) / V. A. Ostreykovsky. Moscow: Vysshaya Shkola, 2003. 463 p.
- 3. Barlow R. Mathematical Theory of Reliability (in Russian) / R. Barlow, F. Proshan. Moscow: Sovetskoe Radio, 1969. 488 p.
- 4. *Dillon B*. Engineering Methods for Providing System Reliability. Translated from English / *B. Dillon, C. Sing.* Moscow: Mir, 1984. 318 p.
- 5. *Polovko A.* M. Fundamentals of Reliability Theory: Practicum (in Russian) / A. M. *Polovko, S. V. Gurov.* St-Petersburg: BKhV Petersburg, 2006. 560 p.
- 6. Reshetov D. N. Reliability of Machines: Manual for Special Machine-Building Institutes of Higher Education. Edited by D. N. Reshetov (in Russian) / D. N. Reshetov, A. S. Ivanov, V. Z. Fadeev. Moscow: Vysshaya Shkola, 1988. 238 p.
- 7. Pozhidaev V. F. On the analytical evaluation of the reliability of information system (in Russian) / V. F. Pozhidaev, P. I. Zabolotnyi, M. I. Kokhanovsky // Tekhnicheskaya Mekhanika. 2012. No 4. P. 76 81.
- 8. *Khazov B. F.* Reference Book on Calculations of Reliability of Machines at the Stage of Design (in Russian) / *B. F. Khazov, B. A. Didusev.* Moscow: Mashinostroynie, 1986. 224 p.
- 9. Kozlov B. A. Reference Book on Reliability Calculations for Radio Electronic and Automatic Equipment (in Russian) / B. A. Kozlov, N. A. Ushakov. Moscow: Sovetskoye Radio, 1975. 472 p.
- 10Ryabinin I. A. Fundamentals and Calculations of Reliability of Ship Power Systems. Second Edition. (in Russian) / I. A. Ryabinin. Leningrad: Sudostroyenie, 1971. 456 p.
- 11. / . . , . . , . . , :
- Reliability of Systems for Electric-Power Supply (in Russian) / V. V. Zorin, V. V. Tislenko, F. Kleppel, G. Adler. Kiev: Vyshcha Shkola, 1984. 192 p.
- 12. Baychelt F. Reliability and Maintenance. Mathematical Approach (in Russian) / F. Baychelt, P. Franken. Moscow: Radio i Svyaz, 1988. 392 p.
- 13. *Pozhidaev V. F.* Applied Problems of Mathematical Statistics (in Russian) / *V. F. Pozhidaev.* Lugansk: Publishing House of VUGU, 1998. 153 p.