



OPTIMIZATION AND MATHEMATICAL MODELING OF COMMUNICATION NETWORKS

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Synopsis

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The main attention is paid to optimization issues, as well as mathematical modeling of systems that are important for the initial stages of the design of communication networks. Examples of solving scalar and vector optimization problems are given taking into account mathematical models of various types of communication networks. Information is given about standard software packages that can be used for optimization and computer simulation of communication networks.

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References

Bezruk, V. M., Bidnyi, Yu. M., Omelchenko, A. V. (2011). Informatsiini mere-zhi zviazku. Part 1. Matematychni osnovy informatsiinykh merezh zviazku. Kharkiv: KhNURE, 292.

Zakharchenko, M. V., Horokhov, S. M., Balan, M. M., Hadzhyev, M. M., Korchynskyi, V. V., Lozhkovskyi, A. H. (2010). Matematychni osnovy opy-mizatsii telekomunikatsiinykh system. Odesa: ONAZ, 240.

Hloba, L. S. (2007). Matematychni osnovy pobudovy informatsiino-teleko-munikatsiinykh system. Kyiv: Norita-plus, 360.

Zaichenko, Yu. P. (2006). Doslidzhennia operatsii. Kyiv: Vydavnychiy dim «Slovo», 816.

Popovskiy, V. V., Saburova, S. O., Oliinyk, V. F., Losiev, Yu. I., Aheiev, D. V., Kaliekina, T. H. et. al.; Popovskiy, V. V. (Ed.) (2006). Matematychni osnovy teorii

elekomunikatsiinykh system. Kharkiv: Kompaniia SMIT, 563.

Larionov, Yu. I., Levykin, V. M., Khazhmuradov, M. A. (2005). Doslidzhen-nia operatsii v informatsiinykh systemakh. Kharkiv: Kompaniia SMIT, 364.

Steklov, V. K., Berkman, L. N., Kilchytskyi, Ye. V. (2004). Optymizatsiia ta modeliuvannia prystroiv i system zviazku. Kyiv: Tekhnika, 576.

Liamets, V. Y., Teviashev, A. D. (2004). Systemnii analiz. Kharkiv: KhNURE, 448.

Chernoruckii, I. G. (2004). Metody optimizatsii v teorii upravleniia. Saint Petersburg: Nitev, 256.

Bezruk, V. M., Bukhanko, A. N., Chebotareva, D. V. (2013). Priniatie opti-malnykh reshenii v infokommunikatsiakh s uchetom sovokupnosti pokaza-telei kachestva. Naukoemkie tekhnologii v infokommunikatsiakh: obrabotka i zaschita informatsii. Kharkiv: KHNURE, 104–125.

Chebotareva, D. V., Bezruk, V. M. (2013). Mnogokriterialnaia optimizatsiia proektnykh reshenii pri planirovanii sotovykh setei mobilnoi sviazi. Kharkiv: Kompaniia SMIT, 148.

Klymash, M. M., Burachok, R. A., Andrusiv, T. V. (2009). Metody vyznachen-nia pokaznyka yakosti posluh v telekomunikatsiinykh merezhakh. Lviv: NU «Lvivska politekhnika», 285.

Zaichenko, O. Yu., Zaichenko, Yu. P. (2007). Doslidzhennia operatsii. Kyiv: Vydavnychiy dim «Slovo», 472.

Semenov, Iu. V. (2005). Proektirovanie setei sviazi sleduiushego pokoleniia. Saint Petersburg: Nauka i tekhnika, 240.

Vyshnevskiy, V. M. (2003). Teoretycheskye osnovy proektyrovaniia kom-piuternykh setei. Moscow: Tekhnosfera, 512.

Dymarskii, Ia. S., Krutiakova, N. P., Ianovskii, G. G. (2003). Upravlenie se-tiami sviazi: Principy, protokoly, prikladnye zadachi. Moscow: ITC «Mobil-nye telekommunikatsii», 384.

Tymchenko, A. A.; Bykov, V. I. (Ed.) (2003). Osnovy systemnoho proektuvannia ta systemnoho analizu skladnykh obiektiv: Osnovy SAPR ta system-noho proektuvannia skladnykh obiektiv. Kyiv: Lybid, 272.

Bezruk, V. M. (2002). Vektorna optymizatsiia ta statystychni modeliuvannia v avtomatyzovanomu proektuvanni system zviazku. Kharkiv: KhNURE, 164.

Vinnickii, V. P., Khilenko, V. V. (2002). Metody sistemnogo analiza i avtoma-tizatsii proektirovaniia telekommunikatsiinykh setei. Kyiv: Interlink, 192.



Nogin, V. D. (2002). Priniatie reshenii v mnogokriterialnoi srede: kolichest-vennii podkhod. Moscow: FIZMATLIT, 176.

Steklov, V. K., Berkman, L. N. (2002). Proektuvannia telekomunikatsiinykh mrezezh. Kyiv: Tekhnika, 792.

Nazarov, A. N. (2002). Modeli i metody rascheta strukturno-setevykh para-metrov ATM setei. Moscow: Goriachaia liniia-Telekom, 256.



Ventcel, E. S. (2001). Issledovanie operacii. Zadachi, principy, metodologiiia. Moscow: Vysshaia shkola, 208.

Chernoruckii, I. G. (2001). Metody optimizacii i priniatiia reshenii. Saint Petersburg: Iz-vo «Lan», 384.

Zakharchenko, M. V., Steklov, V. K., Kniazeva, N. O. et. al. (1996). Avtomaty-zatsiia proektuvannia prystroiv, system ta mrezezh zviazku. Kyiv: Radioama-tor, 268.

Shvarc, M. (1992). Seti sviazi: protokoly, modelirovanie i analiz. Vol 1. Mos-cow: Nauka, 336.

Shtoiar, R. (1992). Mnogokriterialnaia optimizaciia. Teoriia, vychisleniia i prilozheniia. Moscow: Radio i sviaz, 504.

Ashmalov, A. L., Tikhonov, V. A. (1991). Teoriia optimizacii v zadachakh i uprazhneniiaakh. Moscow: Nauka, 488.

Dmitriev, A. N., Ekupov, N. D., Shestopalov, A. M., Moiseev, Iu. G. (1990). Mashinnye metody rascheta i proektirovaniia sistem elektrosviazi i uprav-leniiia. Moscow: Radio i sviaz, 271.

Zaichenko, Iu. P., Shumilova, S. A. (1990). Issledovanie operacii. Kyiv: Vischa shkola, 237.

Bersekas, D., Galager, Ch. (1989). Seti peredachi dannykh. Moscow: Mir, 544.

Perepelica, V. A. (1989). Mnogokriterialnye zadachi teorii grafov. Algoritmi-cheskii podkhod. Kyiv: UMK VO, 68.

Zaichenko, Iu. P. (1988). Issledovanie operacii. Kyiv: Vysshaia shkola, 549.

Morozov, V. K., Doganov, A. V. (1987). Osnovy teorii informacionnykh setei. Moscow: Vysshaia shkola, 269.

Shvarc, M. (1987). Seti EVM: Analiz i proektirovanie. Moscow: Mir.

Nogin, V. D., Protodiakonov, I. O., Evlampiev, I. I. (1986). Osnovy teorii op-timizacii. Moscow: Vysshaia shkola, 379.

Zaichenko, Iu. P., Gonta, Iu. V. (1986). Strukturnaia optimizaciia setei EVM. Kyiv: Tekhnika, 168.

Dubov, Iu. A., Travkin, S. I., Iakimec, V. N. (1986). Mnogokriterialnye modeli formirovaniia i vybora variantov sistem. Moscow: Nauka, 324.

Berezovskii, B. A., Baryshnikov, Iu. M., Borzenko, V. I., Kepner, L. M. (1986). Mnogokriterialnaia optimizaciia. Matematicheskie aspekty. Moscow: Nauka, 296.

Morozov, V. V., Sukharev, A. G., Fedorov, V. V. (1986). Issledovanie operacii v zadachakh i uprazhneniakh. Moscow: Vysshaia shkola, 285.



Sukharev, A. G., Timokhov, V. A., Fedorov, V. V. (1986). Kurs metodov optimizacii. Moscow: Nauka, 328.

Brakhtman, T. R. (1984). Mnogokriterialnost i izbor alternativ v tekhnike. Moscow: Sov. Radio, 326.

Poliak, B. T. (1983). Vvedenie v optimizaciiu. Moscow: Nauka, 384.

Podinovskii, V. V., Nogin, V. D. (1982). Pareto-optimalnye resheniia mnogo-kriterialnykh zadach. Moscow: Nauka, 256.

Kleinrok, L. (1979). Vychislitelnye sistemy s ocherediami. Moscow: Mir, 600.

Moiseev, N. N., Ivanilov, N. N., Stoliarova, E. M. (1978). Metody optimizacii. Moscow: Nauka, 352.

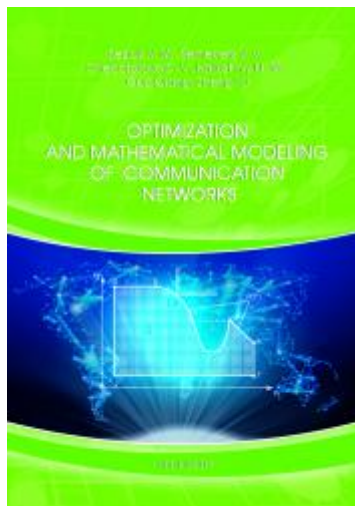
Pashkeev, S. D., Minizov, R. I., Mogilevskaia, V. D. (1976). Mashinnye metody optimizacii v tekhnike sviazi. Moscow: Sviaz, 272.

Martin, Dzh. (1975). Sistemnyi analiz peredachi dannykh. Vol. 2. Proektirovanie sistem peredachi dannykh. Moscow: Mir, 431.

Gutkin, L. S. (1975). Optimizaciia radioelektronnykh ustroystv po sovokupnosti pokazatelei kachestva. Moscow: Sov. radio, 358.

Semenets V., Grebennik I., Listrovoy S., Minuhin S., Ovezgeldyev A. (2019). Modeli i metody kombinatornoy optimizatsii v proyektirovanii i upravlenii. Kyiv: Naukova dumka, 256.

Bezruk V. M., Chebotaryova D. V., Skorik Yu. V. (2017). Multi-criteria analysis and selection of telecommunications facilities. Kharkov: SMIT Company, 268.



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