

Boris Polyak: The List of Research Works¹

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MONOGRAPHS

- 1.1. Polyak, B.T., *Vvedenie v optimizatsiyu* (Introduction to Optimization), Moscow: Nauka, 1983; 2nd ed., revised and supplemented, Moscow: URSS, 2014, and Moscow: Lenand, 2019; 3rd ed., Moscow: URSS, 2023.
- 1.2. Polyak, B.T., *Introduction to Optimization*, New York: Optimization Software, 1987. (An extended and refined translation of the book [1.1], 1983.)
- 1.3. Polyak, B.T. and Shcherbakov, P.S., *Robastnaya ustoychivost' i upravlenie* (Robust Stability and Control), Moscow: Nauka, 2002.
- 1.4. Granichin, O.N. and Polyak, B.T., *Randomizirovannyye algoritmy otsenivaniya i optimizatsii pri pochti proizvol'nykh pomekhakh* (Randomized Algorithms for Estimation and Optimization under Almost Arbitrary Disturbances), Moscow: Nauka, 2003.
- 1.5. Polyak, B.T., Khlebnikov, M.V., and Shcherbakov, P.S., *Upravlenie lineinymi sistemami pri vneshnikh vozmushcheniyakh: tekhnika lineinykh matrichnykh neravenstv* (Control of Linear Systems under Exogenous Disturbances: The Technique of Linear Matrix Inequalities), Moscow: URSS, 2014.
- 1.6. Polyak, B.T., Khlebnikov, M.V., and Rapoport, L.B., *Matematicheskaya teoriya avtomaticheskogo upravleniya* (Mathematical Theory of Automatic Control), Moscow: URSS, 2019.

DISSERTATIONS

- 2.1. Polyak, B.T., Gradient Methods for Minimizing Functionals and Solving Equations and Inequalities, *Cand. Sci. (Phys.–Math.) Dissertation*, Moscow: Moscow State University, 1963.
- 2.2. Polyak, B.T., Optimization Methods in the Presence of Disturbances, *Doctoral (Phys.–Math.) Dissertation*, Moscow: Institute of Control Sciences, 1978.

ARTICLES IN PEER-REVIEWED JOURNALS

- 3.1. Polyak, B.T., A Method for Determining the Mutual Independence of the Dimensions of Quantities, *Nauchn. Dokl. Vyssh. Shkol. Metallurg.*, 1958, no. 2, pp. 118–120.
- 3.2. Kagan, A.S., Polyak, B.T., and Shil'shtein, S.Sh., The Influence of Surface Topography on the Intensity of X-Ray Diffraction Maxima, *Zhurn. Tekh. Fiz.*, 1959, vol. 29, no. 2, pp. 1142–1145.
- 3.3. Ivantsov, G.P., Lyubov, B.Y., Polyak, B.T., and Roitburd, A.L., Calculation of the Crystallization Rate of a Metallic Ingot with Various Heat Flows through Its Surface, *Journal of Engineering Physics and Thermophysics*, 1960, vol. 3, no. 3, pp. 41–48.
- 3.4. Ivantsov, G.P. and Polyak, B.T., The Cooling Mode of a Continuously Casted Flat Ingot with Minimum Thermal Stresses in Its Crust, *Kristallizats. Metall.*, 1960, pp. 139–149.
- 3.5. Polyak, B., Gradient Methods for the Minimisation of Functionals, *USSR Computational Mathematics and Mathematical Physics*, 1963, vol. 3, no. 4, pp. 864–878.

¹ Compiled by P.S. Shcherbakov, A.A. Tremba, and Ya.I. Kvinto. The texts of almost all *journal articles* (and other publications) can be found at <https://sites.google.com/site/lab7polyak/> © A.A. Tremba.

- 3.6. Polyak, B., Some Methods of Speeding Up the Convergence of Iteration Methods, *USSR Computational Mathematics and Mathematical Physics*, 1964, vol. 4, no. 5, pp. 1–17.
- 3.7. Polyak, B., Gradient Methods for Solving Equations and Inequalities, *USSR Computational Mathematics and Mathematical Physics*, 1964, vol. 4, no. 6, pp. 17–32.
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At the time of compiling this list, some scientometric indicators of Boris Polyak's publications on Scopus/Google Scholar were as follows: the Hirsch index, 33/64; the number of citations, over 9 100/31 600 (with a constant growth rate since 2004 and an "exponential" one since 2015); the two most cited articles, [3.6] (over 1 600/3 300 citations) and [3.67] (about 1 100/2 300 citations); the number of coauthors, 81.

The compilers of this list are grateful to the readers for possible additions as well as indications of inaccuracies and simple mistakes. In our point of view, for experts in the corresponding fields of science, the list of Boris Polyak's research works well characterizes the epoch and reflects the popularity of various topics and the change of priorities over time. A complete and accurate bibliography will be published in a separate brochure.