

LIST  
of the scientific papers of Vasil Atanasov Popov

1966

1. On some properties of the Hausdorff metric. *Mathematica*, (Cluj), **8** (31) (1966) 163-172 (with Bl. Sendov) (in Russian).
2. Approximation de fonctions d'un grand nombre de variables independantes au moyen de polynomes dans la metrique de Hausdorff. *C. R. Acad. bulg. Sci.*, **19** (1966) 561-564.

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3. On the accuracy of the iterative method for static solving of tunnel constructions. *Tehnicheska Mis"l*, **4** (1967) 45-51 (with St. Hristov) (in Bulgarian).
4. On the convergence of linear operators in Hausdorff distance. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, **62** (1967/1968) 215-223 (with A. Andreev) (in Bulgarian).

1968

5. Approximation of convex sets. *C. R. Acad. bulg. Sci.*, **12** (1968) 993-995 (in Russian).
6. Approximation of functions of several variables by algebraic polynomials in the metric of Hausdorff. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques.*, **63** (1968/1969) 61-76 (with Bl. Sendov) (in Russian).
7. On the widths of the space of continuous functions in the metric Hausdorff. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, **63** (1968/1969) 167-185 (with B. Boyanov) (in Bulgarian).

1969

8. On a convergence of the derivatives of linear positive operators. *C. R. Acad. bulg. Sci.*, **22** (1969) 507-509 (with Bl. Sendov) (in Russian).
9. On Approximation by Spline Functions. *Proc. Conf. Constr. Theory of Functions Budapest'69*, (1969) 163-172 (with G. Freud).
10. A method to determine dosage distribution in intratissue gamma-therapy by electronic computer. *Scientific papers, The Cancer Research Institute, Sofia*, **13** (1969) 109-116 (with P. Penchev) (in Bulgarian).
11. Approximation of functions with respect to a  $\Delta$ -metric of Hausdorff type. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, **64** (1969/1970) 127-142 (with A. Andreev) (in Bulgarian).
12. Some remarks on the derivatives of linear positive operators. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, **64** (1969/1970) 143-152 (with V. Veselinov) (in Russian).
13. On the best approximation by means of algebraic and trigonometric polynomials in the Hausdorff metric. *Bulletin de l'Institut de Mathematiques, Acad. Bulg. des Sci.*, **10** (1969) 213-221 (with V. Veselinov) (in Bulgarian).

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14. Approximation of convex sets. *Bulletin de l'Institut de Mathematiques, Acad. Bulg. des Sci.*, **11** (1970) 67-80 (in Bulgarian).
15. Approximation of convex function by polygons. *Bulletin de l'Institut de Mathematiques, Acad. Bulg. des Sci.*, **11** (1970) 117-126 (in Bulgarian).
16. Convergence of the derivatives of linear positive operators. *Bulletin de l'Institut de Mathematiques, Acad. Bulg. des Sci.*, **11** (1970) 107-115 (with Bl. Sendov) (in Bulgarian).
17. On the approximation by means of spline functions. *C. R. Acad. bulg. Sci.* **23** (1970) 755-758 (with Bl. Sendov) (in Russian).
18. Approximation in the plane of curves by polynomial curves. *C. R. Acad. bulg. Sci.* **23** (1970) 639-643 (with Bl. Sendov) (in Russian).
19. On the classes characterized by the best spline approximation. *Math. zametki*, **8** (1970) 137-148 (with Bl. Sendov) (in Russian).
20. Some questions connected with approximation by splines and polynomials. *Studia Sci. Math. Hung.*, **5**

(1970) 161-171 (with G. Freud) (in Russian).

21. A generalization of the estimates for the approximation of functions by linear positive operators. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, 65 (1970/1971) 191-200 (with Bl. Sendov) (in Russian).
22. On the converse problem of the theory of approximation in the Hausdorff's metric. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, 65 (1970/1971) 201-204 (in Russian).
23. Approximation of continuous functions by rational functions in a  $\Delta$ -metric of Hausdorff type. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, 65 (1970/1971) 205-209 (with A. Andreev) (in Bulgarian).
24. Approximation of convex functions by polygons. *C. R. Acad. bulg. Sci.*, 23 (1970) 643-645 (in Russian).

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25. Some question connected with the convergence in Hausdorff metric. *Bulletin de l'Institute de Mathematiques*, 12 (1971) 87-96 (in Bulgarian).
26. An estimate from below in the spline approximations theory. *Studia Sci. Math. Hung.*, 6 (1971) 387-391 (with G. Freud) (in Russian).
27. On the approximation of abstract functions in Hausdorff metric. *Mathematika Balkanica*, 1 (1971) 190-194 (with S. Troyanski) (in Russian).
28. Local approximations in Banach spaces. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, 66 (1971/1972) 321-330 (in Russian).
29. Convex approximations. PhD dissertation, Institute of Mathematics, Bulgarian Academy of Sciences, Sofia, 1971 (in Bulgarian).

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30. The Exact Asymptotic Behavior of the Best Approximation by Algebraic and Trigonometric Polynomials in the Hausdorff Metric. *Math. USSR Sbornik*, 89(131) (1972) 138-147 (with Bl. Sendov) (in Russian) (English translation - 18 (1972) 139-149).
31. Parametric approximation of convex curves by polynomial curves. *Annuaire de l'Universite de Sofia, Fac. des Mathematiques*, 67 (1972/1973) 333-341 (in Russian).
32. On the approximation of functions by splines and rational functions. *Constructive Function Theory (Proc. Intern. Conf. Varna, 1970) Publ. House Bulg. Acad. Sci., Sofia, 1972*, 89-94 (with Bl. Sendov) (in Russian).
33. Analog of the Nikolskij's theorem for approximation of functions by algebraic polynomials in Hausdorff metric. *Constructive Function Theory (Proc. Intern. Conf. Varna, 1970) Publ. House Bulg. Acad. Sci., Sofia, 1972*, 95-105 (with Bl. Sendov) (in Russian).

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34. Algorithm and program for calculating of tunnel coverings using the theory of elasticity. *Tehnicheska mis"l*, 10 (1973) 69-76 (with St. Hristov, St. Borshukova) (in Bulgarian).
35. On a Generalization of Jackson's Theorem for Best Approximation. *Journal of Approximation Theory*, 9 (1973) 102-111 (with Bl. Sendov).
36. Direct and Converse Theorem for Spline Approximation with Free Knots. *C. R. Acad. bulg. Sci.*, 26 (1973) 1297-1299.

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37. On the Connection between Rational and Spline Approximation. *C. R. Acad. bulg. Sci.*, 27 (1974) 623-626.
38. Approximation of Monotone Functions by Monotone Polynomials in Hausdorff Metric. *Revue d'analyse numerique et de la theorie de l'approximation*, 3 (1974) 79-88 (with Bl. Sendov).
39. On the Rational Approximation of Functions of the Class  $V_r$ . *Acta Math. Acad. Sci. Hung.*, 25 (1974) 1-2, 61-65.
40. On a General Localization Theorem and Some Applications in the Theory of Rational Approximation. *Acta Math. Acad. Sci. Hung.*, 25 (1974) 1-2, 165-170 (with J. Szabados).
41. One Generalization of the Popoviciu's Theorem for Bernstein Polynomials. *Mathematica (Cluj)* 16(39)

(1974) 159-172 (with V. Veselinov).

42. Local approximation of functions by means of linear operators. Mathematics and mathematical education (Second spring conference of the Union of the Bulgarian mathematicians, Vidin, 1973) Publ. House Bulg. Acad. Sci., Sofia, 1974, 183-191 (in Bulgarian).

1975

43. A Remark on the Rational Approximation of Functions. C. R. Acad. bulg. Sci., 28 (1975) 1303-1306 (with J. Szabados).
44. Local approximation of functions. Mat. zametki, 17 (1975) 369-382 (in Russian).
45. On approximation of absolutely continuous functions by splines. C. R. Acad. bulg. Sci. 28 (1975) 1299-1301 (in Russian).
46. On approximation of functions of bounded variation by rational functions. Serdica, 1 (1975) 96-103 (in Russian).
47. An Analogue of Jackson Theorem of  $G$ -Distance in the Space of Continuous Functions. C. R. Acad. bulg. Sci. 28 (1975) 1159-1162 (with G. Iliev).
48. Approximation of Convex Functions by Algebraic Polynomials in Hausdorff Metric. Serdica, 1 (1975) 386-398.
49. Direct and Converse Theorems for Spline Approximation with Free Knots. Serdica, 1 (1975) 218-224.

1976

50. Direct and converse theorems in approximation theory. Doctor of the Mathematical Sciences Dissertation, Institute of Mathematics, Bulgarian Academy of Sciences, Sofia, 1976 (in Bulgarian).
51. Approximation of locally monotone functions by linear positive operators in  $L$  and its application for error estimation of the collocation method. Serdica, 2 (1976) 75-81 (with G. Gasanov) (in Russian).
52. Rational Uniform Approximation of Class  $V_r$  and its Applications. C. R. Acad. bulg. Sci., 29 (1976) 791-794.
53. Numerical methods. Vol. I. Nauka i Izkustvo, Sofia, 1976, (with Bl. Sendov) (in Bulgarian).
54. Hausdorff Derivatives in  $F_\Delta$ . Serdica, 2 (1976) 131-137 (with Bl. Sendov, B. Penkov, Sv. Markov).
55. Direct and Converse Theorems for Spline Approximation with Free Knots in  $L_p$ . Mathematica - Revue Anal. Numer. Theorie Approx. 5 (1976) 1, 69-78.

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56. Uniform Rational Approximation of the Class  $V_r$  and its Applications. Acta Math. Acad. Sci. Hung., 29 (1977) 1-2, 119-129.
57. Parametric Approximation of Piecewise Analytic Functions. Pliska, 1 (1977) 72-78 (with G. Iliev).
58. Converse Theorem for Onesided Trigonometrical Approximations. C. R. Acad. bulg. Sci., 30 (1977) 1529-1532.
59. Jackson's Type Theorems for Onesided Polynomial and Spline Approximation. C. R. Acad. bulg. Sci., 30 (1977) 1533-1536 (with A. Andreev, Bl. Sendov).
60. The Exact Order of the Best Approximation to Convex Functions by Rational Functions. Math. USSR Sbornik, 103(145) (1977) 285-292 (with P. Petrushev) (in Russian) (English translation - 32 (1977) 245-251).
61. Some characteristics of functions and their applications in spline and rational approximations. Approximation theory of functions (Proc. Intern. Conf. Kaluga 1975, eds. S. B. Stechkin, S. A. Telyakovskij) Nauka, Moskow, 1977, 286-293 (in Russian).

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62. Steckin's Type Theorems for Onesided Trigonometrical and Spline Approximation. C. R. Acad. bulg. Sci., 31 (1978) 151-154 (with A. Andreev).
63. Numerical methods. Vol. II. Nauka i Izkustvo, Sofia, 1978, (with Bl. Sendov) (in Bulgarian).
64. Direct and Converse Theorems for Onesided Approximation. Linear Spaces and Approximation (Proc.

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65. Uniform Approximation of Functions with Derivatives of Bounded Variation and its Applications. Colloquia Mathematica Societatis Janos Bolyai, 19. Fourier Analysis and Approximation Theory (Proc. Colloq. Budapest, Hungary, 1976, eds. G. Alexits, P. Turan) North-Holland, Amsterdam, 1978, 639-647.
- 1979**
66. Jackson's type theorems for the best one-sided approximation by trigonometric polynomials and splines. Mat. zametki, 26 (1979) 791-804 (with A. Andreev, Bl. Sendov) (in Russian).
67. A note on the one-sided approximation of functions. C. R. Acad. bulg. Sci. 32 (1979) 1319-1322 (in Russian).
68. Some Estimates for a Numerical Solution of a Boundary Problem for Ordinary Differential Equations of a Second Order. C. R. Acad. bulg. Sci., 32 (1979) 1023-1026 (with A. Andreev, Bl. Sendov).
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69. On the One-Sided Approximation of Functions. Constructive Function Theory'77 (Proc. Inter. Conference Blagoevgrad, 1977), Publ. House Bulg. Acad. Sci., Sofia, 1980, 465-468.
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71. On the Connection between Rational Uniform Approximation and Polynomial  $L_p$  Approximation of Functions. Quantitative approximation (Proc. Internat. Sympos., Bonn, 1979) Academic Press, New York, 1980, 267-277.
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73. Some questions for the error estimation of the numerical methods for solution of the differential equations. Variation-difference methods in mathematical physics (Proc. Soviet Math. Conf. Novosibirsk) 1981, 105-112 (in Russian).
74. Averaged Local Moduli and their Applications. Approximation and Function Spaces (Proc. Intern. Conf. Gdansk 1979, ed. Z. Ciesielski) North-Holland, Amsterdam, 1981, 572-583.
75. Error estimate of the numerical solution of ordinary differential equations. JVM&MF, 21 (1981) 635-650 (with A. Andreev, Bl. Sendov) (in Russian).
- 1982**
76. On the Quantitative Korovkin Theorems in  $L_p$ , C. R. Acad. bulg. Sci., 35 (1982) 897-900.
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- 1983**
78. Averaged moduli of smoothness. Publishing House of the Bulg. Acad. of Sci., Sofia, 1983 (with Bl. Sendov) (in Bulgarian) (Russian translation - Mir, Moscow, 1988; English translation - John Wiley & Sons, Chichester, 1988).
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81. Averaged Moduli of Smoothness for Functions of Several Variables, and the Function Spaces Generated by them. Proc. Steklov Inst. Math., 164 (1983) 136-141 (with V. Hristov) (in Russian) (English translation - 2 (1985) 155-160).
82. Function Spaces, Generated by the Averaged Moduli of Smoothness. Pliska, 5 (1983) 132-143.

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84. The One-Sided K-Functional and its Interpolation Space. Proc. Steklov Inst. Math., **163** (1984) 196-199 (in Russian) (English translation - **4** (1985) 229-232).
85. On the Convergence and Saturation of Jackson Polynomials in  $L_p$  Spaces., Approximation Theory and its Applications, **1** (1984) 1-10 (with J. Szabados).
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87. On the Error Estimation in Numerical Methods. Computational mathematics, Banach Center Publications, **13**, PWN-Polish Publishers, Warsaw, 1984, 647-658 (with A. Andreev).
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91. One-sided K-functional - multivariate case. Theory of approximation of functions (Proc. Intern. Conf., eds. N. P. Korneychuc, S. B. Steckin, S. A. Telyakovskii) Nauka, Moscow, 1987, 358-362 (in Russian).
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93. On the Inequalities of Berry-Essen and V.M. Zolotarev. Stability Problems for Stochastic Models (Proc. Intern. Seminar Varna 1985, eds. V. V. Kalashnikov, B. Penkov, V. M. Zolotarev) Lecture Notes in Mathematics, **1233**, Springer, Berlin, 1987, 114-125.
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95. Onesided Trigonometrical Approximation of Periodic Multivariate Functions. Mathematica Balkanica (new series), **2** (1988) 230-243 (with L. Alexandrov).
96. Interpolation of Besov Spaces. Trans. Amer. Math. Soc., **305** (1988) 397-414 (with R. DeVore).
97. Rational Approximation of Real Functions. Encyclopedia of Mathematics and its Applications, **28**, Cambridge University Press, Cambridge, 1988 (with P. Petrushev).
98. Interpolation of Approximation Spaces. Constructive theory of functions'87 (Proc. Intern. Conf. Varna, 1987) Publ. House Bulg. Acad. Sci., Sofia, 1988, 110-119 (with R. DeVore).
- 1989**
99. Direct and Converse Theorems for Numerical Methods. C. R. Acad. bulg. Sci., **42** (1989) 33-36 (with V. L. Makarov).
100. Nonlinear Multivariate Approximation. Approximation Theory VI, vol. 2 (Proc. Sixth Intern. Symposium Texas, 1989, eds. C.K. Chui, L.L. Schumaker, J.D. Ward), Academic Press, Boston, 1989, 519-536.
- 1990**
101. Compression of Wavelet Decompositions. (with R. DeVore, B. Jawerth) (manuscript).