

# Prof. dr. Radu Păltănea

## Studies

1972-1977 Faculty of Mathematics and Informatics, University of Braşov.

1990-1992 PhD Thesis, *Approximation operators and their connections with some particular allures* (Romanian), University "Babeş-Bolyai", Cluj-Napoca, (supervisor Prof. dr. doc. Elena Popoviciu)

## Academic positions

Professor, Faculty of Mathematics and Computer Science Transilvania University of Braşov since 1980:

Assistant Professor 1980-1991

Lecturer 1991-1996

Associate Professor 1996-2003

Full Professor 2003-present

Head of the Chair of Mathematical Analysis and Probabilities 2004-2011

PhD supervisor from 2007, 3 finished thesis.

Editor-coordinator *Bulletin of the Transilvania University of Braşov, Series III Mathematics, Informatics, Physics*, 2003-present

## Publications

### a. Books

1. *Approximation Theory Using Positive Linear Operators*, Birkhäuser, Boston, (Springer Media), (2004),
2. *Approximation by Positive Linear Operators: Estimates with Second Order Moduli*, Transilvania University Publisher, Braşov, (2003),
3. (with E. Păltănea) *Elements of Mathematical Analysis and Approximation Theory* (Romanian) [with E. Păltănea], Transilvania University Publisher, Braşov, (2009),
4. (with E. Păltănea) *Mathematical Analysis* (Romanian), Transilvania University Publisher, Braşov, (2003).

## b. Articles

1. (with C. L. Moldovan) A definition of two-dimensional Schoenberg type operators, *Symmetry-Basel* 12 (2020), no. 8, article 1364, WOS.
2. (with C. L. Moldovan and I. Vişa) Improvement of clear sky models for direct solar irradiance considering turbidity factor variable during the day, [with C. L. Moldovan and I. Vişa], *Renewable Energy* 161 (2020), 559-669, WOS.
3. (with C. L. Moldovan) The exact form of the second moment of third degree Schoenberg spline operators, *Numer. Funct. Analysis Optimiz.* 41 (2020), no. 11, 1308-1325, WOS.
4. On the geometric series of linear positive operators, *Constructive Mathematical Analysis*, 2 (2019), no. 2, 49-56.
5. (with C. L. Moldovan) Second degree Schoenberg operators with knots at the roots of Chebyshev polynomials, [with C. L. Moldovan], *Rev. R. Acad. Cienc. Exactas Fis. Nat. Ser. A Math.* 113 (2019), no. 3, 2793-2804, WOS.
6. (with M. Smuc) Sharp estimates of asymptotic error of approximation by general positive linear operators in terms of the first and the second moduli of continuity, *Results Math* (2019), 74:70, WOS.
7. (with N. Minculete) Some improved inequality in an inner product space, *Journal of Mathematical Inequalities*, vol. 13 (2019), issue 1, 147-157, WOS.
8. Asymptotic constant in approximation of twice differentiable functions by a class of positive linear operators, *Results Math* (2018), 73:64, WOS.
9. (with C. L. Moldovan and I. Vişa) Experimental assessment of the Meliss simulation model accuracy of the direct solar irradiance in Braşov, *An. Univ. Vest Timișoara Ser. Physics*, Vol XL (2018), 24-37.
10. (with C. L. Moldovan and I. Vişa) First order statistics-based features selection for clustering using Gaussian mixture model, *An. Univ. Dunărea de Jos Galați Fasc. II Mat. Fiz. Mec. Teor.* (2018), no. 1, 104-110.
11. (with U. Abel and O. Agratini) A complete asymptotic expansion for the quasi-interpolants of Gauß-Weierstraß operators, *Mediterr. J. Math.*, (2018) 15:156, WOS.
12. (with M. Talpău Dimitriu) Estimates for weighted  $K$ -functionals using the least concave majorant of weighted moduli of continuity, *Numer. Funct. Analysis Optimiz.* 38 (2017), no. 12, 1589-1600, WOS.
13. (with N. Minculete) Improved estimate for the triangle inequality, *Journal of Inequalities and Applications*, (2017) article 17, WOS
14. (with B. Minea) Summation methods applied to Voronovskaya-type theorems for the partial sums of Fourier series and for Fejer operators, *Mathe-*

- matica Slovaca* 66 (2016), no. 1, 235-244, WOS
15. (with M. Smuc) General estimates of the weighted approximation on interval  $[0, \infty)$  using moduli of continuity, *Bull. Transilvania Univ. Braşov, Series III: Math. Inform. Physics*, **8(57)** (2015), no. 2, 93-108.
  16. (with U. Abel and M. Ivan) The Durrmeyer variant of an operator defined by D.D. Stancu, *Applied Mathematics and Computation*, **259** (2015), 116-123, WOS
  17. (with G. Stan) Voronovskaja theorem for simultaneous approximation by Bernstein operators on a simplex, *Mediterr. J. Math.* vol. 12 (2015), no. 3, 889-900, WOS.
  18. (with G. Stan) Transformation of the second order modulus by positive linear operators, *An. Şt. Univ. Ovidius Constanţa*, 23 (2015), 237-246, WOS.
  19. Approximation of fractional derivatives by Bernstein polynomials, *General Mathematics*, vol. 22 (2014), no. 1, 91-98.
  20. (with U. Abel and M. Ivan) Geometric series of positive linear operators and the inverse Voronovskaya theorem on a compact interval, *J. Approx. Theory*, vol. 184 (2014), 163-175, WOS.
  21. Simultaneous approximation by a class of Szász-Mirakjan operators, *J. Applied Functional Analysis*, vol. 9 (2014), no's 3-4, 356-368.
  22. (with U. Abel and M. Ivan) Geometric series of Bernstein operators revisited, *J. Math. Anal. Appl.*, vol. 400 (2013), no. 1, 22-24, WOS.
  23. A note on generalized Bernstein-Kantorovich operators, *Bulletin of the Transilvania University of Braşov, Series III: Mathematics, Informatics, Physics*, vol. 6(55) (2013), no. 2, 27-32.
  24. Generalized Bernstein-Durrmeyer operators on a simplex, *General Mathematics.*, vol. 20, (2012), no. 5, 71-82.
  25. Estimates of approximation in terms of a weighted modulus of continuity, *Bulletin of the Transilvania University of Braşov, Series III: Mathematics, Informatics, Physics*, vol. 4(53) (2011), no. 1, 67-74.
  26. (with Gh. Zbăganu) On the moments of iterated tail, *Mathematical Reports* vol. 13(63) no. 1 (2011), 65-74, WOS.
  27. Estimates for general positive linear operators on non-compact interval using weighted moduli of continuity, *Studia Univ. Babeş-Bolyai Math*, vol. 56 (2011), no. 2, 497-504.
  28. On a constant in the lower estimate for Bernstein operators, *Annals of the Tiberiu Popoviciu Seminar*, vol 8, (2010), 45-53.
  29. Representation of the K-functional  $K(f, C[a, b], C^1[a, b], \cdot)$  - a new approach, *Bulletin of the Transilvania University of Braşov, Series III: Mathematics, Informatics, Physics*, vol. 3(52) (2010) 93-100.
  30. (with H. Gonska) Quantitative convergence theorems for a class of

- Bernstein-Durrmeyer operators preserving linear functions, *Ukrainischi Matematichi Journal* vol. 62 (2010) 913–922, WOS.
31. (with H. Gonska) Simultaneous approximation by a class of Bernstein-Durrmeyer operators preserving linear functions, *Czechoslovak Mathematical Journal*, vol. 60 (135) (2010), no. 3, 783–799. WOS.
32. The degree of approximation by Bernstein operators in the knots *General Mathematics* vol. 18, no.1 (2010), 99–112.
33. (with H. Gonska) General Voronovskaja and asymptotic theorems in simultaneous approximation, *Mediterranean Journal Math.* vol. 7 (2010), 37–49, WOS.
34. A second order weighted modulus on a simplex, *Results in Mathematics* 53 (3-4) (2009), 361–369, WOS.
35. (with S. Gal, H. Gonska, D. Kacsó, E. Stănilă, A. Vernescu) Luciana and Alexandru Lupaş: in memoriam, *Results in Mathematics* vol. 53 (3-4) (2009), 203-215, WOS.
36. Asymptotic expansion for Durrmeyer operators in complex domains, *Proceedings of The 6-th Congress of Romanian Mathematicians, Bucureşti, 2007*, Romanian Academy Publisher, 2008, 347–353.
37. On approximation by Bernstein operators in the knots, *Ann. Tiberiu Popoviciu Semin. Funct. Equ. Approx. Convexity* vol. 6, (2008) 91–96.
38. Modified Szász-Mirakjan operators of integral form *Carpathian Journal of Mathematics* vol. 24 (3-4) (2008), 378-385, WOS.
39. (with C. Cismaşiu) Asymptotic formulae for exponential operators, *Bulletin of the Transilvania University of Braşov, Series III: Mathematics, Informatics, Physics*, vol. 1(50), (2008), 459-464.
40. On some constants in approximation by Bernstein operators, *General Mathematics* vol. 16, no. 4 (2008), 137–148.
41. A class of Durrmeyer type operators preserving linear functions, *Ann. Tiberiu Popoviciu Semin. Funct. Equ. Approx. Convexity*, vol. 5, (2007), 109–117.
42. (with H. Gonska) Riesz-type representation for positive linear operators preserving continuity, *Acta Math. Hungarica*, vol. 114 (1-2) (2007), 153-163, WOS.
43. Estimates with adapted moduli of continuity for a Chebyshev system, *Proc. International Conference on Numerical Analysis and Approximation Theory, NAAT'06, Cluj-Napoca, July 2006*, Casa Carţii de Stiinţă, Cluj-Napoca, (2006), 337–352.
44. The power series of Bernstein operators, *Automation Computers Applied Mathematics*, Vol. 15, No.1, (2006), 7–14.
45. The estimate of the degree of approximation using an extended Chebyshev system, *Bull. Univ. Transilvania, Braşov, serie B*, vol. 12(47), (2005),

- 1–8.
46. Approximation of functions in Banach spaces using positive linear operators, in *Mathematical Analysis and Approximation Theory RoGer 2004 Băișoara*, (ed. by Ioan Gavrea, Mircea Ivan), Mediamira Science Publisher, Cluj-Napoca, (2005), 5–20.
47. An inequality involving linear positive operators and convex functions, in proc. *Conference on Analysis, Functional Equations, Approximation and Convexity in Honour of Professor Elena Popoviciu on the Occasion of Her 80th Birthday*, (ed. by L. Lupșă and M. Ivan), Risoprint Press, Cluj-Napoca, (2004), 183–187.
48. Estimates for positive linear operators using an arbitrary Chebychev system, *Annals of the Tiberiu Popoviciu Seminar of Functional Equations, Approximation and Convexity*, Mediamira, Cluj-Napoca, (2004), 75–84.
49. Optimal constant in approximation by Bernstein operators, *J. Comput. Analysis Appl.* **5**, no. 2, (2003), 195–235, WOS.
50. (with I. Gavrea, H. Gonska and G. Tachev) General Estimates for the Ditzian–Totik Modulus, *East Journal of Approximation*, Bulgarian Acad. Vol. 9, no. 2, (2003), 175–194.
51. Vector variants of some approximation theorems of Korovkin and of Sendov and Popov, in: *Constructive Theory of functions Varna 2002*, (ed. by B.D. Bojanov), Darba Publ. House, Sofia, (2003), 366–373.
52. Estimates with optimal constants for approximation of differentiable functions, In "Proc. of the "Tiberiu Popoviciu" Itinerant Seminar of Functional Equations, Approximation and Convexity", (ed. by E. Popoviciu), Srima Publisher, Cluj-Napoca, (2003).
53. Generalized convex functions, *Proc. of the 17-th. Sci. Sess. on Math. and Appl.*, (ed. by G. Orman), Transilvania Univ. Press, Brașov, (2003), 183–204.
54. Approximation of derivatives by nonlinear operators, *L'Analyse Numér. et la Th. de l'Approx.*, Romanian Acad., **31**, no. 2, (2002), 187–194.
55. Simultaneous approximation by generalized Durrmeyer operators with Jacobi weights, *Proc. of the 16-th. Sci. Sess. on Math. and Appl.*, (ed. by G. Orman), Univ. Transilvania Brașov, (2002), 59–64.
56. Estimates of approximation by linear operators in the multidimensional case, in: *Mathematical Analysis and Approximation Theory*, (The 5-th Romanian-German Seminar on Approximation Theory and its Applications RoGer 2002 - Sibiu, ed. by A. Lupăș, H. Gonska and L. Lupăș), Burg Verlag, Sibiu, (2002), 207–220.
57. Estimates with second order moduli, *Rend. Circ. Mat. Palermo*, **68** Suppl., (2002), 727–738.
58. Approximation by Durrmeyer operators with general weights, *Proc. In-*

- ternational Symposium on Numerical Analysis and Approximation Theory, Cluj-Napoca 2002, dedicated to the 75-th Anniversary of Professor Dr. Dimitrie D. Stancu*, (ed. by R. Trimbițaș), Cluj Univ. Press, (2002), 396–403.
59. Estimates with generalized second order moduli, *Proc. of the "Tiberiu Popoviciu" Itinerant Seminar of Functional Equations, Approximation and Convexity*, (ed. by E. Popoviciu), Srima Publisher, Cluj-Napoca, (2002), 197-210.
60. Approximation of continuous functions by a sequence of generalized Durrmeyer type operators, *Proc. Annual Meeting of the Romanian Society of Mathematical Sciences, Brașov 2001*, (ed. by E. Păltănea et al.), Vol I, Transilvania Univ. Press, Brașov, (2001), 198–201.
61. On a limit operator, *Proc. of the "Tiberiu Popoviciu" Itinerant Seminar of Functional Equations, Approximation and Convexity*, (ed. by E. Popoviciu), Srima Press, Cluj-Napoca, (2001), 169–180.
62. A note on Durrmeyer-type operators, *Proc. of the 15-th. Sci. Sess. on Math. and Appl.*, (ed. by G. Orman), Univ. Transilvania Brașov, (2001), 37-40.
63. A representation of quasi-convex functions with respect to a n-parameter family, *Seminaire de la Théorie de la Meilleure Approximation, Convexité et Optimization 1960-2000*, Srima Publisher, Cluj-Napoca, (2000), 235–241.
64. New type of estimates with moduli of continuity, *Proc. of the 4<sup>th</sup> Romanian- German Seminar on Approximation Theory and its Applications, Brașov 2000*, ed. by H. Gonska and al., Schriftenreihe des Fachbereichs Mathematik, Gerhard Mercator Univ. Duisburg, SM-DU-485, (2000), 110-114.
65. A characterization of algebraical polynomials by symmetry, *Proc. of the 2-nd.Int. Conf. on "Symmetry and antisymmetry in mathematics"*, Univ. Transilvania Brașov, (2000), 275–276.
66. An improved estimate with the second order modulus of continuity, *Proc. of the "Tiberiu Popoviciu" Itinerant Seminar of Functional Equations, Approximation and Convexity*, (ed. by E. Popoviciu), Srima Publisher, Cluj-Napoca, (2000), 167–171.
67. The optimality of some estimates with second order moduli of continuity, *Proc. of the 13-th. Sci. Sess. on Math. and Appl.*, Univ. Transilvania Brașov, (1999), 12-14.
68. Saturation theorem for certain sequence of positive linear operators, in *Analysis, functional equations, approximation and convexit*, (Proc. Conf. in Honour of Professor Elena Popoviciu on the occasion of Her 75<sup>th</sup> Birthday, ed. by L. Lupșa and M. Ivan), Carpatica Press, Cluj-Napoca, (1999), 227–230.
69. Estimates of the degree of approximation with second order moduli of

- continuity, *Proc. Annual Meeting of the Romanian Society of Mathematical Sciences, Cluj-Napoca 1998*, (ed. by Gh. Micula, P. Mocanu, I. Şerb), Digital Data Publisher, Cluj-Napoca, (1999), 131–134.
70. On the transformation of the second order modulus by Bernstein operators, *L'Analyse Numér. et la Th. de l'Approx.*, Romanian Acad., **27**, no. 2, (1998), 309–313.
71. On the invariant subspace of some type of linear operators, *Studii în metode de analiză numerică și optimizare (Chişinău)*, **1**, no. 1, (1998), 44–46.
72. On an optimal constant in approximation by Bernstein operators, *Rend. Circ. Mat. Palermo*, **52** suppl., (1998), 663–686.
73. On the degree of approximation by Bernstein operators, *General Mathematics*, **6** (1998), 65–69.
74. Optimal estimates with moduli of continuity, *Result. Math.* **32**, Birkhäuser, Basel, (1997), 318–331.
75. Improved estimates of the degree of approximation with second order moduli of continuity - applications, *Proc. Annual Meeting of the Romanian Society of Mathematical Sciences, Bucureşti, 1997*, (1997), 175–177.
76. New second order moduli of continuity, In: *Approximation and optimization* (Proc. Int. Conf. Approximation and Optimization, Cluj-Napoca 1996, ed. by D.D. Stancu et al.), vol I, Cluj-Napoca: Transilvania Press, (1997), 327–334.
77. Convexity of higher order that is invariant under symmetries, *Proc. Internat. Conf. on "Symmetry and antisymmetry in mathematics"*, Univ. Transilvania Braşov, (1996), 93–96.
78. The preservation of the quasiconvexity of higher order by the Bernstein's operators, *L'Analyse Numér. et la Th. de l'Approx.*, Romanian Acad., **25**, no. 1-2, (1996), 195–201.
79. Best constants in estimates with second order moduli of continuity, In: *Approximation Theory*, (Proc. Int. Dortmund Meeting on Approximation Theory 1995, ed. by M.W. Müller, M. Felten, D.H. Mache), Akad Verlag, Berlin, serie Mathematica Research vol. 86, (1995), 251–275, WOS.
80. A property of an interpolating operator, *Studia Univ. Babeş-Bolyai*, **37**, no. 4, (1992), 57–62.
81. (with I. Popescu, B. Merfea, C. Cioară) Algorithm for rounded and coaxial derivations measurement, *VDI Berichte*, Duisburg, **940**, (1992), 55–60.
82. Estimates of the estimation of functions by positive linear operators, *Proc.Sci. Sess. with teachers and researches of Rep. Moldova*, Univ. Transilvania, Braşov, (1991), 101–104.
83. Une généralisation de la notion de convexité, *Research Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **6**, (1990), 193–196.

84. On the estimate of the pointwise approximation of functions by linear positive functionals, *Studia Univ. Babeş-Bolyai*, **53**, no. 1, (1990), 11–24.
85. (with R. Sătnoianu) Functions whose level sets are all perfect, *Real Analysis Exchange*, **15**, no. 2 (1989-1990), 548–558.
86. Une théorème d'extrémalité, *Proc. Sci. Sess. of the Dept. of Math. Univ. Braşov*, (1989), 47-51.
87. Sur la sommation des séries entiers sur la frontière de convergence, par des méthodes d'Euler généralisées, *Bul. Univ. Braşov, serie C*, **31**, (1989), 35–40.
88. Estimates with second order moduli of continuity (Synthesis) , *Research Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **4**, (1989), 47–78.
89. General estimates for linear positive operators that preserve linear functions, *Anal. Numér. Théor. Approx.*, **18**, no. 2, (1989), 147–159.
90. Improved estimates with the second order modulus of continuity in approximation by linear positive operators, *Anal. Numér. Théor. Approx.*, Romanian Acad., **17**, no. 2, (1988), 171–179.
91. Methodes de sommation d'Euler généralisées, *Bul. Univ. Braşov, serie C*, **30**, (1988), 124–131.
92. Improved constant in approximation with Bernstein operators, *Research Semin. Fac. Math. "Babeş-Bolyai" Univ.* **6**, (1988), 261–268.
93. Une classe générale d'opérateurs polynômiaux. *L'Analyse Numér. et la Th. de l'Approx.*, Romanian Acad., **17**, no. 1, (1988), 49–52, 1988.
94. Sur une classe d'opérateurs positifs, *Research Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **6**, (1987), 251-254.
95. L'estimation de l'approximation des dérivées d'ordre  $r$  par les polynômes de Brass, *Res. Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **7**, (1986), 207–210.
96. Une propriété d'extremalité des valeurs propres des opérateurs polynômiaux de Durrmeier généralisés, *L'Analyse Numér. et la Th. de l'Approx.*, Romanian Acad., **15**, no. 1, (1986), 57–64.
97. On the connection between positive linear operators and a Chebyshev systems of three functions, (Romanian) in: *Applied Mathematics and Mechanics*, vol I, University of Braşov, (1985), 125-131.
98. Inverse theorems for a polynomial operator, *Research Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **6**, (1985), 149–152.
99. L'estimation de l'approximation des fonctions continues par les opérateurs de Brass, *Research Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **6**, (1984), 261–263.
100. Sur un opérateur polynômial défini sur l'ensemble des fonctions intégrables, *Res. Semin. Fac. Math. "Babeş-Bolyai" Univ.*, **2**, (1983) 101–106.
101. An example of grammar wich generates the true formulae of propositional calculus (Romanian), *Bul. Univ. Braşov, serie C*, **22**, (1980), 93–100.

**Citations:** 200 in Web of Science

**Participations to scientific conferences:** 80 national and international conferences in Romania, Germany, Italy, Bulgaria, Turkey

**Research stages** at Univ. Duisburg-Essen, 2001, 2006, 2006, 2007, 2014.

**Grant** CNCSIS A 431/2006 (director) *Studies on approximation theory, optimizations, stochastic approximation and applications*, 2006-2008

**Reviewer** at MathScinet and Zentralblatt Math. and more than 50 journals.

**Academic award:** The Simion Stoilov award of Romanian Academy in 2007 for the group of papers *Approximation theory using positive linear operators*

Prof. Radu Păltănea  
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