

List of publications – Prof. Eli Levin

Research books

1. Christoffel Functions and Orthogonal Polynomials for Exponential Weights on $[-1,1]$ (with D.S.Lubinsky), *Memoirs of the Amer. Math. Soc.*, vol. 111, no. 535, 1994, 146 pp.
2. Orthogonal Polynomials for Exponential Weights (with D.S.Lubinsky), *Canadian Mathematical Monographs Series*, vol. 4, Springer, New York, 2001, 470 pp.

Research papers

1. Approximation of Analytic Functions by Rational Functions, (with V.M. Tikhomirov), *Soviet. Math. Dokl.* 8(3), (1967), 622-626.
2. About One Theorem of V.D. Erokhin (with V.M. Tikhomirov), *Russ. Math. Surveys* 23(1), (1968), 122-135.
3. The Distribution of the Poles of Rational Functions of Best Approximation and Related Questions, *Math. U.S.S.R. Sbornik*, 9 (1969), 267-274.
4. Approximation by Rational Functions in the Complex Plane, *Math. Notes*, 9 (1971), 72-77.
5. The Distribution of the Poles of Best Approx. Rational Functions and Analytical Properties of Approximated Functions, *Israel J. Math.*, 24(2), (1976), 139-144.
6. An Example of a Doubly Connected Domain Which Admits a Quadrature Identity, *Proc. of the AMS* 60 (1976), 163-168.
7. On the Regularity Properties of the Variation Function (with D. Aharonov and A. Atzmon), *Illinois J. Math.* 22(2), (1978), 295-305.
8. Attenuating the Transverse Edge Effect in MHD Generators (with A. Yakhot), *AIAA Journal* 16(11), (1978), 1203-1205.
9. Simultaneous Rational Approximation of a Function and Its Derivatives in the Complex Plane (with D.S. Lubinsky), *J. Approx. Th.* 44 (1985), 205-220.
10. A Model for Corneal Reendothelialization After Surgical Trauma (with N. Landshman and others), *Current Eye Research* 4 (1985), 555-56.
11. Note on Real vs. Complex Chebyshev Approximation on an Interval, *J. Approx. Th.* 47 (1986), 214-218.
12. Best Rational Approximation of Entire Functions Whose Maclaurin Series Coefficients Decrease Rapidly and Smoothly (with D.S. Lubinsky), *Trans. of the AMS* 293 (1986), 533-545.
13. On the Degree of Complex Rational Approximation to Real Functions, *Constructive Approx.* 2 (1986), 213-219.
14. On a Problem of Saff and Varga, in *Approximation Theory V* (1986), C. Chui and L. Schumaker, eds., Academic Press, 427-429.
15. Canonical Products and the Weights $\exp(-|x|^\alpha)$, $\alpha > 1$, with Applications (with D.S. Lubinsky), *J. Approx. Th.* 49 (1987), 149-169.
16. Weights on Real Line that Admit Good Relative Polynomial Approximation, with Applications (with D.S. Lubinsky), *J. Approx. Th.* 49 (1987), 170-195.
17. Some Examples in Approximation on the Unit Disk by Reciprocals of Polynomials (with E.B. Saff), in *Approximation Theory, Tampa* (1987), E.B. Saff, ed., *Lecture Notes in Math* 1287, 70-82.

18. Degree of Approximation of Real Functions by Reciprocals of Real and Complex Polynomials (with E.B. Saff), *SIAM J. of Math. Anal.* 19 (1988), 233-245.
19. Jackson Type Theorems in Approximation by Reciprocals of Polynomials (with E. B. Saff), *Rocky Mount. J.* 19 (1989), 243-249.
20. Rows and Diagonals of the Walsh Array for Entire Functions with Smooth Maclaurin Series Coefficients (with D.S. Lubinsky), *Constructive Approx.* 6 (1990), 257-286.
21. On Approximation in the L_p -norm by Reciprocals of Polynomials (with D. Leviatan and E.B. Saff), *J. Approx. Theory* 57 (1989), 322-331.
22. L_∞ - Markov and Bernstein Inequalities for Freud Weights (with D. Lubinsky), *SIAM J. of Math. Anal.* 21 (1990), 1065-1082.
23. Szego-type Asymptotics for Minimal Blaschke Products (with E.B. Saff), in *Progress in Approximation Theory, Computational Math. Series* 17 (1992), Springer, 105-126.
24. L_p -extensions of Gonchar's Inequality for Rational Functions (with E.B. Saff), *Mat. Sbornik*. 183 (1992), p. 97-110 [English translation: *Math. USSR Sbornik* 76 (1992), 199-210].
25. Christoffel Functions, Orthogonal Polynomials, and Nevai's Conjecture for Freud Weights (with D.S. Lubinsky), *Constructive Approximation* 8 (1992), 463-535.
26. Exact Convergence Rates for Best L_p Rational Approximation to the Signum Function and for the Optimal Quadrature in H^p (with E.B. Saff), in *Methods of Approximation Theory in Complex Analysis and Mathematical Physics*, Moscow, Nauka (1992), 98-109.
27. Bounds for Orthogonal Polynomials for Exponential Weights (with D.S. Lubinsky), in *Proceedings of 2nd International Conference on Functional Analysis and Approximation Theory*, Suppl. ai Rendiconti del Circolo Matem. di Palermo, II (33), (1993), 75-96.
28. Optimal Ray Sequences of Rational Functions Connected with the Zolotarev Problem (with E.B. Saff), *Constructive Approx.* 10 (1994), 235-273.
29. L_p -Markov-Bernstein Inequalities for Freud Weights (with D.S. Lubinsky), *J. Approx. Theory* 77 (1994), 229-248.
30. Christoffel Functions and Orthogonal Polynomials for Erdős Weights on $(-\infty, \infty)$, (with D.S. Lubinsky and T.Z. Mthembu), *Rendiconti di Matematica* VII (14), (1994), 199-289.
31. Orthogonal Polynomials and Christoffel Functions for $\exp(-|x|^\alpha)$, $\alpha < 1$ (with D.S. Lubinsky), *J. Approx. Theory* 80 (1995), 219-252.
32. Two Problems on Interpolation (with B. Shekhtman), *Constructive Approx.* 11 (1995), 513-515.
33. Rational Approximation with Locally Geometric Rates (with V.V. Maimeskul and E.B. Saff), *J. Approx. Theory* 92 (1998), 308-330.
34. Bounds for Orthogonal Polynomials for Exponential Weights (with D.S. Lubinsky), *J. Comp. Applied Math* 99 (1998), 475-490.
35. Fast Decreasing Rational Functions and their Applications, in *Computational Methods and Function Theory (CMFT'97)*, N. Papamichael, St. Ruscheweyh and E.B.Saff (eds.), World Sc. Publ. (1999), 371-386.

36. Asymptotics Associated with Exponential Weights (with D.S. Lubinsky), *International Math. Research Notices* 12 (1999), 673-683.
37. Fast Decreasing Rational Functions (with E.B. Saff), *Israel J. of Math.* 114 (1999), 125-148.
38. The Distribution of Zeros and Poles of Asymptotically Extremal Rational Functions for Zolotarev's Problem (with E.B. Saff), *J. Approx. Theory* 110 (2001), 88-108.
39. Green Equilibrium Measures and Representations of an External Field (with D.S. Lubinsky), *J. Approx. Theory* 113 (2001), 298-323.
40. Zero Distribution of Bergman Orthogonal Polynomials for Certain Planar Domains (with E.B. Saff and N. Stylianopoulos), *Constr. Approx.* 19 (2003), 411-435.
41. Asymptotics for Entropy Integrals associated with Exponential Weights (with D.S. Lubinsky), *J. Comp. Applied Math.* 156 (2003), 265-283.
42. Orthogonal Polynomials for Exponential Weights $x^{2\rho} \exp(-2Q(x))$ on $[0, d]$ (with D.S. Lubinsky), *J. Approx. Theory* 134 (2005), 199-256.
43. Potential Theoretic Tools in Polynomial and Rational Approximation (with E.B. Saff), *Lecture Notes in Control and Information Sciences*, Juliette Leblond and J.-D. Fournier (eds.), Springer, 2006, 71-94.
44. Orthogonal Polynomials for Exponential Weights $x^{2\rho} \exp(-2Q(x))$ on $[0, d]$, II (with D.S. Lubinsky), *J. Approx. Theory* 139 (2006), 107-143.
45. Orthogonal Polynomials for Weights Close to Indeterminacy (with D.S. Lubinsky), *J. Approx. Theory* 147 (2007), 129-168.
46. On Recurrence Coefficients for Exponential Weights (with D.S. Lubinsky), *J. Approx. Theory* 144 (2007), 260-281.
47. Universality Limits Involving Orthogonal Polynomials on the Unit Circle (with D.S. Lubinsky), *Comput. Methods Funct. Theory* 7(2), (2007), 543-561.
48. Applications of Universality Limits to Zeros and Reproducing Kernels of Orthogonal Polynomials (with D.S. Lubinsky), *J. Approx. Theory* 150 (2008), 69-95.
49. Asymptotics of Derivatives of Orthogonal Polynomials on the Real Line (with D.S. Lubinsky), *Acta Math. Hungar.* 118 (2008), 115-127.
50. Universality Limits in the Bulk for Varying Measures (with D.S. Lubinsky), *Advances in Math.* 219 (2008), 743-779.
51. Universality Limits for Exponential Weights (with D.S. Lubinsky), accepted in *Constr. Approx.*