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CURRICULUM VITAE

Uri Elias

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Technion – Israel Institute of Technology
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Date and place of birth: August 1, 1949, Hungary.

Marital Status: Married, three children.

Academic Degrees

- 1976 D.Sc., Department of Mathematics, Technion.
- 1973 M.Sc., Cum laude, Department of Mathematics, Technion.
- 1971 B.Sc., Summa cum laude, Department of Mathematics, Technion.

Academic Appointments

- 1987– Associate Professor, Department of Mathematics, Technion.
- 1982–1983 Visiting Associate Professor, Oklahoma State University.
- 1978–1987 Senior Lecturer, Department of Mathematics, Technion.
- 1977–1978 Visiting Assistant Professor, Carnegie-Mellon University.
- 1976–1977 Lecturer, Department of Mathematics, Technion.

Research Interests

Ordinary Differential Equations.

Teaching Experience

Undergraduate courses: Various Calculus courses, Ordinary differential equations, Partial differential equations, Functions of complex variable, Fourier series, Theory of functions, Introduction to Applied Mathematics, Computer aided Problem Solving.

Graduate courses: Ordinary Differential Equations II, Topics in Differential Equations.

Videotaped courses: Advanced Calculus II, Infinitesimal Calculus II, Functions of complex variable, Ordinary Differential Equations.

Technion Activities

- 1993–1999 Vice Chairman for Teaching.
1993–1995 Faculty representative in Technion Senate.
1997–2001 Academic Disciplinary Court.
1998–2001 Faculty representative in Technion Senate.
1999–2001 Technion Senate Committee for Undergraduate and Graduate Studies.
2006–2009 Technion Senate Committee for Undergraduate and Graduate Studies.
2008– Chairman’s Assistant for Computerization.
2008– Technion Committee for Coordinating Communication and Computer Technologies.

Public Professional Activities

- 2002–2004 Treasurer, Israel Mathematical Union.
2006– Associate Editor, *Advances in Dynamical Systems and Applications*.
2009 Mathematics Syllabus Review Committee, The Open University, Israel.
2010 Recruiting Committee for Faculty in Mathematics, The Open University, Israel.

Membership in Professional Societies

- American Mathematical Society.
Israel Mathematical Union.

Honors

- 1975 Jabotinsky Prize for Graduate Students.
1992 Mahler Prize (with D. Aharonov).
2005 Mahler Prize (with A. Pinkus).
2009 Jacknow Award for Excellence in Teaching.
2011 Yanai Prize for Excellence in Academic Education.

Research Grants

- 1988–1990 Basic Research Foundation of the Israeli Academy of Sciences (with D. Aharonov).

Publications

Theses

1. M.Sc. Thesis, “*On the Number of Zeros of Solutions of a Linear Differential Equation*”, Advisor: Prof. M. Lavie, Technion, 1973.
2. Ph.D. Thesis, “*Oscillation Problems for Linear Differential Equations*”, Advisors: Prof. B. Schwarz and Prof. D. London, Technion, 1976.

Articles in Refereed Journals

1. U. Elias, *The extremal solutions of the equation $Ly + p(x)y = 0, I$* , Journal of Mathematical Analysis and Applications, 50 (1975), 447–457.
2. U. Elias, *Nonoscillation theorems in convex sets*, Journal of Mathematical Analysis and Applications, 52 (1975), 129–141.
3. U. Elias, *The extremal solutions of the equation $Ly + p(x)y = 0, II$* , Journal of Mathematical Analysis and Applications, 55 (1976), 253–265.
4. U. Elias, *Nonoscillation and eventual disconjugacy*, Proceedings of the American Mathematical Society, 66 (1977), 269–275.
5. U. Elias, *Eigenvalue problems for the equation $Ly + \lambda p(x)y = 0$* , Journal of Differential Equations, 29 (1978), 28–57.
6. U. Elias, *Oscillatory solutions and extremal points for a linear differential equation*, Archive of Rational Mechanics and Analysis, 70 (1979), 177–198.
7. U. Elias, *Necessary conditions and sufficient conditions for disfocality and disconjugacy of a differential equation*, Pacific Journal of Mathematics, 81 (1979), 379–397.
8. U. Elias, *Focal points for a linear differential equation whose coefficients are of constant signs*, Transactions of the American Mathematical Society, 249 (1979), 187–202.
9. U. Elias, *A classification of the solution of a differential equation according to their asymptotic behaviour*, Proceedings of the Royal Society of Edinburgh, 83A (1979), 25–38.
10. U. Elias, *Green's function for a non-disconjugate differential operator*, Journal of Differential Equations, 37 (1980), 318–350.
11. U. Elias and K. Kreith, *Non linear differential systems with monotone solutions*, Hiroshima Mathematical Journal, 10 (1980), 533–556.
12. U. Elias, *Generalization of an inequality of Kiguradze*, Journal of Mathematical Analysis and Applications, 97 (1983), 277–290.
13. U. Elias, *Comparison theorems for disfocality and disconjugacy of differential equations*, SIAM Journal of Mathematical Analysis, 15 (1984), 922–931.
14. U. Elias, *A classification of the solutions of a differential equation according to their behaviour at infinity, II*, Proceedings of the Royal Society of Edinburgh, 100A (1985), 53–66.

15. U. Elias, *Minors of the Wronskian of the differential equation $L_n y + p(x)y = 0$* , Proceedings of the Royal Society of Edinburgh, 106A (1987), 341–359.
16. U. Elias, *Minors of the Wronskian of the differential equation $L_n y + p(x)y = 0$, II, Dominance of solutions.* Proceedings of the Royal Society of Edinburgh, 108A (1988), 229–239.
17. D. Aharonov and U. Elias, *Invariant curves around a parabolic fixed point at infinity*, Ergodic Theory and Dynamical Systems, 10 (1990), 209–229.
18. D. Aharonov and U. Elias, *Parabolic fixed points, invariant curves and action-angle variables*, Ergodic Theory and Dynamical Systems, 10 (1990) 231–245.
19. U. Elias, *Zeros of solutions and of Wronskian for the differential equation $L_n y + p(x)y = 0$* , Transactions of the American Mathematical Society, 324 (1991), 27–40.
20. U. Elias and H. Gingold, *Oscillation of two-term differential equations through asymptotics*, Journal of Mathematical Analysis and Applications, 186 (1994), 283–305.
21. U. Elias and H. Gingold, *Oscillation and block diagonalization*, Journal of Mathematical Analysis and Applications, 199 (1996), 202–212.
22. U. Elias and H. Gingold, *Asymptotic approximation for matrix differential equations and applications*, Differential and Integral Equations, 10 (1997), 137–152.
23. D. Aharonov, R. L. Devaney and U. Elias, *The dynamics of a piecewise linear map and its smooth approximation*, International Journal of Bifurcation and Chaos, 7 (1997), 351–372.
24. U. Elias, *Integral means and Pólya factorizations*, Proceedings of the American Mathematical Society, 126 (1998), 2071–2075.
25. U. Elias and A. Skerlik, *On a conjecture about an integral criterion for oscillation*, Archivum Mathematicum (Brno), 34 (1998), 393–399.
26. U. Elias and H. Gingold, *More on asymptotic approximation for matrix differential equations*, Journal of Mathematical Analysis and Applications, 230 (1999), 97–111.
27. U. Elias, *Bounds for solutions of a differential inequality*, Proceedings of the American Mathematical Society, 128 (2000), 475–484.
28. U. Elias and H. Gingold, *Effects of varying nonlinearity and their singular perturbation flavour*, Journal of Mathematical Analysis and Applications, 248 (2000), 309–326.

29. U. Elias, W. Fang and H. Gingold, *Differential equations with varying nonlinearity and singular perturbations*, International Journal of Differential Equations and Applications, 3 (2001), 387–400.
30. U. Elias and H. Gingold, *A method of asymptotic integration of almost diagonal systems*, Asymptotic Analysis, 29 (2002), 343–357.
31. U. Elias and A. Pinkus, *Nonlinear eigenvalue problems for a class of ordinary differential equations*, Proceedings of the Royal Society of Edinburgh, 132A (2002), 1333–1359.
32. U. Elias and A. Pinkus, *Nonlinear eigenvalue-eigenvector problems for STP matrices*, Proceedings of the Royal Society of Edinburgh, 132A (2002), 1307–1331.
33. U. Elias, *Rearrangement of a conditionally convergent series*, American Mathematical Monthly, 110 (2003), 57.
34. U. Elias and H. Gingold, *A framework for asymptotic integration of differential systems*, Asymptotic Analysis, 35 (2003), 281–300.
35. U. Elias, *Singular eigenvalue problems for the equation $y^{(n)} + \lambda p(x)y = 0$* , Monatshefte für Mathematik, 142 (2004), 205–225.
36. U. Elias, *Eventual disconjugacy of $y^{(n)} + \mu p(x)y = 0$ for every μ* , Archivum Mathematicum (Brno), 40 (2004), 193–200.
37. U. Elias and H. Gingold, *Critical points at infinity and blow up of solutions of autonomous polynomial differential systems via compactification*, Journal of Mathematical Analysis and Applications, 318 (2006), 305–322.
38. U. Elias and H. Gingold, *On the approximation of the Jacobi polynomials*, Rocky Mountain Journal of Mathematics, 37 (2007), 159–184.
39. U. Elias, *Qualitative analysis of a differential equation of Abel*, American Mathematical Monthly, 115 (2008), 147–149.
40. U. Elias, *Existence of global solutions of some ordinary differential equations*, Journal of Mathematical Analysis and Applications, 340 (2008), 739–745.
41. U. Elias and H. Gingold, *Approximation of the Jacobi polynomials and the Racah coefficients*, Rocky Mountain Journal of Mathematics, 40 (2010), 849–872.
42. D. Aharonov and U. Elias, *Singular Sturm comparison theorems*, Journal of Mathematical Analysis and Applications, 321 (2010), 759–763.

43. D. Aharonov, M. Bohner and U. Elias, *Discrete singular Sturm comparison Theorems*, Journal of Difference Equations and Applications, DOI: 10.1080/10236198.2011.594440
44. D. Aharonov and U. Elias, *Sturm comparison theorem in singular situations*, Functional Differential Equations, 18 (2011), 171–175.

Books

1. U. Elias, *Oscillation Theory of Two-Term Differential Equations*, Kluwer Publishers, Dordrecht, 1997, viii+217 pp., ISBN 0-7923-4447-2.
2. U. Elias, *Introduction to Ordinary Differential Equations*, [in Hebrew], published by the Department of Mathematics, Technion, 2009, v+260 pp.

Review Papers

1. U. Elias, *Disconjugacy*, Encyclopaedia of Mathematics, Supplement Vol. I, Kluwer Publishers, Dordrecht, 1997, pp. 225–226.

Conferences

Invited Talks

1. *11th Midwest Differential Equations Conference*, Lincoln, Nebraska, 1982, title: “*Comparison theorems for disfocality and disconjugacy*”.
2. *International Conference on Qualitative Theory of Differential Equations*, Edmonton, Canada, 1984, title: “*The solution space of n-th order linear differential equation*”.
3. *Canadian Mathematical Society 1986 Annual Meeting*, “*Oscillation, Bifurcation and Chaos*”, Toronto, Canada, 1986, title: “*Minors of the Wronskian for solutions of the differential equation $L_n y + p(x)y = 0$* ”.
4. *Conference on qualitative aspects of differential equations*, Weizmann Institute, April 1987, title: “*Oscillation theory for the differential equation $L_n y + p(x)y = 0$* ”.
5. *Equadiff 87*, Xanthi, Greece, August 1987, title: “*Minors of Wronskian of an ordinary differential equation*”.
6. *G. Butler Memorial Conference on Differential Equations* Edmonton, Canada, June 1988, title: “*Invariant curves around parabolic fixed points*”.

7. *Eleventh Dundee Conference on Differential Equations*, Dundee, Scotland, July 1990, title: “*Stability of Parabolic fixed points of area preserving mapping*”.
8. *Equadiff 91*, Barcelona, Spain, August 1991, title: “*Oscillation of two-term differential equations through asymptotics*”.
9. *German-Israeli Workshop on Dynamical Systems*, Jerusalem, January 1992, title: “*Invariant curves of area-preserving maps*”.
10. *Equadiff 93*, Bratislava, Slovakia, August 1993, title: “*Oscillation and block diagonalization*”.
11. *Equadiff 95*, Lisbon, Portugal, July 1995, title: “*Asymptotic approximation for matrix differential equations*”.
12. *Annual Meeting of Israel Mathematical Union*, Rechovot, May 1996, title: “*Asymptotic approximation for second order matrix differential equations*”.
13. *Annual Meeting of Israel Mathematical Union*, Bar Ilan Univ., May 1997, title: “*Integral means and Pólya factorizations*”.
14. *Equadiff 97*, Brno, Czech Republic, August 1997, title: “*Integral means and Pólya factorizations*”.
15. *Workshop on Qualitative Theory of Differential Equations*, Brno, Czech Republic, September 1998, title: “*An intergral criterion for oscillation*”.
16. *Colloquium on Differential and Difference Equations*, Brno, Czech Republic, September 2000, title: “*Effects of varying nonlinearity and their singular perturbation flavour*”.
17. *Memorial Meeting in honor of Professor S. Strelitz*, Haifa Univ., December 2000, title: “*Differential equations with varying nonlinearity and singular perturbations*”.
18. *International Linear Algebra Conference*, Haifa, June 2001, title: “*Nonlinear eigenvalue-eigenvector problems for STP matrices (and ordinary differential equations)*”.
19. *Equadiff 2003*, Hasselt, Belgium, July 2003, title: “*Asymptotic integration of differential systems*”.
20. *Dynamical Systems and Applications*, Antalya, Turkey, July 2004, title: “*A variation of the WKB approximation and its application to Jacobi polynomials*”.
21. *Equadiff 2005*, Bratislava, Slovakia, July 2005, title: “*Critical points at infinity and blow up of solutions of polynomial differential systems*”.

22. *Annual Meeting of Israel Mathematical Union*, Bar Ilan Univ., May 2007, title: “*Existence of Global Solutions of Some Ordinary Differential Equations*”.
23. *Functional Differential Equations and Applications*, Ariel University Center, August 2010, title: “*Singular Sturm Comparison Theorems*”.

Refereed Papers in Conference Proceedings

1. U. Elias, *Minors of the Wronskian for solutions of the differential equation $L_n y + p(x)y = 0$* , in “Oscillation, Bifurcation and Chaos”, (F. V. Atkinson et al, Editors), CMS Conference Proceedings, American Mathematical Society, 8 (1987), 117–123.
2. U. Elias, *Minors of the Wronskian of the differential equation $L_n y + p(x)y = 0$ and their applicatons*, in “Differential Equations, Proceedings of the 1987 Equadiff Conference”, (C. Dafermos et al, Editors), Marcel Dekker, 1989, pp. 215–222.
3. U. Elias, H. Gingold, *Oscillation of two-term differential equations through asymptotics*, in “Equadiff 9, International Conference on Differential Equations”, (C. Perello et al, Editors), World Scientific Publisher, 1993, pp. 463–467.
4. U. Elias, *Asymptotic approximation for matrix differential equations through asymptotics*, in “International Conference on Differential Equations - Equadiff 95”, (L. Magalhaes et al, Editors), World Scientific Publisher, 1998, pp. 316–321.