Name: Haggai (Guy) Katriel
Date:24.7.20

CURRICULUM VITAE

1. Personal Details

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2. Higher Education

A. Undergraduate and Graduate Studies

Period of Study	Name of Institution and Department	Degree	Year of Approval of Degree
1988-1990	Department of Mathematics, Technion IIT	BSc. in Mathematics (summa cum laude).	1990
1991-1993	Department of Mathematics, University of Haifa	MA in Mathematics, (summa cum laude)	1993
1994-1999	Department of Mathematics, Technion IIT	. Phd in Mathematics, Technion – Israel Institute of Technology	1999
2000	Department of Education, Haifa University	Teaching Diploma with specialization in Mathematics Education	2000

B. Post-Doctoral Studies

Period of Study	Name of Institution, Department and Host	Degree	Year of Completion
2001-2002	Department of Education, Haifa University. Host: Prof. Michal Yerushalmi	Post Doc (Vatat fellowship)	2002
2003-2006	Institute of Mathematics, Hebrew University. Host: Prof. Matania Ben-Artzi	Post Doc (Landau fellowship)	2006
2006	Institute of Mathematics, Clausthal TU. Host: Prof. Michael Demuth	Minerva Fellow	2006
2007	Department of Mathematics, University of British Columbia. Host: Prof Ivar Ekelnad	Visiting Scholar	2007
2007-2008	Institute of Mathematics, Clausthal TU. Host: Prof. Michael Demuth	Humboldt fellow	2008

3. Academic Ranks and Tenure in Institutes of Higher Education

Dates	Name of Institution and Department	Rank/Position
2009-2011	Biomathematics Unit, Faculty of Life Sciences, Tel-Aviv University.	Research Associate Head of Lab: Prof. Lewi Stone
2011-2015	Department of Mathematics, ORT Braude College.	Senior Lecturer
2015 - present	Department of Mathematics, ORT Braude College.	Associate Professor

4. Scholarly Positions and Activities outside the Institution

Reviewer for: Zentralblatt Math, F1000, Advanced Nonlinear Studies, J. Math. Biology, Nonlinearity, Proceedings of AMS, SIAM J. Math. Analysis, Physica D, Journal of Mathematical Analysis and Applications, Journal of Mathematical Physics, Nonlinear Analysis, PLoS ONE, Theoretical Ecology, Theoretical Population Biology, Chaos, Chaos Solitons & Fractals, Statistical Methods in Medical Research, Fixed Point Theory and Applications, J. Roy. Soc. – Interface, Numerical Algorithms, Physica A, Physics Letters A, Mathematical Biosciences and Engineering, J. of Biological Dynamics, Nonlinear Analysis: Modelling and Control, Communications in Nonlinear Science and Numerical Simulation

5. Participation in Scholarly Conferences

a. **Active Participation**

International Conferences

Date	Name of Conference	Place of Conference	Subject of Lecture/Discussion	Role
1999	Second Symposium on Nonlinear Analysis	Torun, Poland	Periodic solutions of the forced pendulum	lecture
2006	6th AIMS International Conference on Dynamical Systems, Differential Equations and Applications	Poitiers, France	Existence of periodic solutions for enzyme-catalyzed reactions with periodic substrate input	lecture
2006	Heat Kernels 06	Blaubauren, Germany	Inequalities for moments of eigenvalues using complex analysis	lecture
2008	International Conference on PDEs and Spectral Theory	Goslar, Germany	Resonances in the one-dimensional discrete Schroedinger equation	lecture
2009	Interdisciplinary workshop on periodic oscillations	Granada, Spain	Oscillators coupled through an environment	lecture
2010	1st International Workshop on Mathematical Methods in Systems Biology	Tel Aviv, Israel	Dynamics of oscillators coupled through an environment	lecture & poster

2011	Fifth International Conference on Complex Analysis & Dynamical Systems	Akko, Israel	From spectral theory to bounds on zeros of complex functions	lecture
2011	Mathematical Physics, Spectral Theory and Stochastic Analysis	Clausthal, Germany	Random walks and resonances	lecture
2012	Spectral Day	Clausthal, Germany	Convergence to equilibrium in random market models	lecture
2014	Joint Meeting of IMU and AMS	Tel-Aviv, Israel	Equilibria in some kinetic exchange models	lecture
2018	COST scientific meeting on "Investigation and mathematical analysis of avant-guard disease control via Mosquito Nano-Tech repellents"	Turin, Italy	Modelling a Polio outbreak in Israel	lecture
2018	ECCM-ECFD	Glasgow, Scotland	Spline functions, the discrete biharmonic operator, and approximate eigenvalues	lecture

Conferences in Israel

Date	**Name of Conference**	**Place of Conference**	**Subject of Lecture/Discussion**	**Role**
2006	Third Israeli Mini-Workshop in Applied and Computational Mathematics	Hebrew University, Jerusalem	Travelling waves in sine-Gordon rings: a topological method	lecture

2010	28th Israel Symposium on Computational Mathematics	Hebrew University, Jerusalem	Discrete time stochastic age of infection models and their fitting to data	lecture
2012	ORT Braude Interdisciplinary Conference		Epidemic models with seasonality	lecture
2013	ORT Braude Interdisciplinary Conference		Gambler's ruin probability: a general formula	lecture
2014	ORT Braude Interdisciplinary Conference		Equilibria in some kinetic exchange models	lecture
2015	ORT Braude Interdisciplinary Conference		Eigenvalue bounds for non-selfadjoint operators in Banach spaces	lecture
2016	Workshop on Operator Theory and applications	ORT Braude College, Karmiel	Estimates for eigenvalues of non-selfadjoint operators	lecture
2018	Israeli Mathematical Union Annual meeting	Technion, Haifa	Spline functions, the discrete biharmonic operator, and approximate eigenvalues	lecture
2018	ORT Braude Interdisciplinary Conference		Spline functions, the discrete biharmonic operator, and approximate eigenvalues	lecture

b. **Organization of Conferences or Sessions**

Date	**Name of Conference**	**Place of Conference**	**Role**
2011	Complex Analysis and Dynamical Systems V	Naharyia	Member of organizing committee
2013	Complex Analysis and Dynamical Systems VI	Naharyia	Member of organizing committee
2014	Braude Interdisciplinary Research Conference	Naharyia	Member of organizing committee
2015	Complex Analysis and Dynamical Systems VII	Naharyia	Member of organizing committee
2017	1st Israeli Modelling Week	Naharyia	Member of organizing committee
2019	Israeli Mathematical Union Annual Meeting	Jerusalem	Co-organizer of Applied Mathematics Session

6. Invited Lectures\ Colloquium Talks

Date	Place of Lecture	Name of Forum	Presentation/Comments
2005	Weizmann Institute	Mathematical Analysis Seminar	Differentially algebraic functions
2007	University of British Columbia	Mathematical physics and PDE seminar	Differences of semigroups, eigenvalue bounds, and their application to Schroedinger operators
2005	Hebrew University	PDE Seminar	Differentially algebraic functions
2008	Erlangen University	Mathematical Physics Seminar	The explicit spectral theory of discrete one-dimensional Schrödinger operators with finitely supported potentials
2008	Technical University of Clausthal	Spectral Theory Seminar	Stability problems for planar Navier-Stokes equation
2008	Technion	Applied mathematics and PDE seminar	Synchronization of oscillators coupled through an environment
2008	Hebrew University	PDE seminar	Differences of semigroups, eigenvalue bounds, and their application to Schroedinger operators
2014	Weizmann Institute	Mathematical Analysis Seminar	Distribution of eigenvalues of linear operators in a Banach space

2015	Technion	Applied mathematics and PDE seminar	Distribution of eigenvalues of linear operators in a Banach space
2018	Afeka College	Sciences Seminar	Nonliner phenomena in contagion models
2018	Technion	Applied mathematics and PDE seminar	The dynamics of two-stage contagion

7. Scholarships, Awards and Prizes

2007 Humboldt postdoctoral fellowship.

2010 Outstanding poster award at the 1st International Workshop on "Mathematical Methods in Systems Biology", Tel-Aviv University.

8. Teaching

a. Courses Taught in Recent Years

Year	**Name of Course**	**Type of Course** **Lecture/Seminar/** **Workshop/High Learn Course/ Introduction Course (Mandatory)**	**Degree**	**Number of Students**
2016-2018	Calculus 2	Lecture / Mandatory		~60
2016-2019	Mathematical Modelling	Seminar / Mandatory		5-10
2016-2019	Ordinary differential equations for	Lecture / Mandatory		5-10

	mathematics students			
2017	Ordinary differential equations for electric engineering students	Lecture / Mandatory		~60
2019	Differential equations, series, and transforms (for software engineering students)	Lecture / Mandatory		~60
2018	Seminar for 1st year mathematics students	Seminar / Mandatory		5

b. **Supervision of Graduate Students**

Name of Student	**Title of Thesis**	**Degree**	**Date of Completion / in Progress**	**Students' Achievements**
Mariam Khalil	Investigating the effect of vaccine against infectious diseases using mathematical models	MA (University of Haifa) Joint Supervision with Prof. Tawfik Mansour	Completed June 2020	

PUBLICATIONS

A. Ph.D. Dissertation

On the number of solutions of nonlinear equations, Technion, 1999, Supervisor: Prof. Alexander Ioffe

B. Articles in Refereed Journals

Published

54. G. Katriel, Optimality of constant arrival rate for a linear system with a bottleneck entrance. Systems & Control Letters, 138 (2020), 104649.

53. T. Gadrich, G. Katriel, Estimating the rate of defects under imperfect sampling inspection – a new approach, Probability in the Engineering and Informational Sciences (2019), available online.

52. G. Katriel, The dynamics of two-stage contagion, Chaos, Solitons and Fractals: X 2 (2019), 100010.

51. M. Elin, F. Jacobzon and G. Katriel, Linearization of holomorphic semicocycles in Banach spaces, Rivista Mat. Univ. Parma 10 (2019), 145--164.

50. M. Elin, F. Jacobzon, and G. Katriel, Continuous and holomorphic semicocycles in Banach spaces,. Journal of Evolution Equations, 19(4), 1199-1221.

49. M. Ben-Artzi & **G. Katriel**, Spline functions, the biharmonic operator and approximate eigenvalues. Numerische Mathematik 141, 839-879 (2019).

48. **G. Katriel**, A quantitative discounted central limit theorem using the Fourier metric, Statistics & Probability Letters 145 321-326 (2019).

47. M. Elin, F. Jacobzon, and **G. Katriel**, Non-commutative holomorphic semicocycles, Michigan Mathematical Journal 68, 505-526 (2019).

46. R. Yaari, E. Kaliner, I. Grotto, **G. Katriel**, J. Moran-Gilad, D. Sofer, E. Mendelson, E. Miller, A. Huppert, Modeling the spread of polio in an IPV-vaccinated population: lessons from the 2013 silent outbreak in southern Israel, BMC Medicine 14:95 (2016).

45. T. Gadrich, **G. Katriel**, A mechanistic stochastic Ricker model: analytical and numerical investigations, Int. J. Bifurcation Chaos 26, 1650067 (2016).

44. R. Yaari, **G. Katriel**, L. Stone, E. Mendelson, M. Mandelboim, A. Huppert, Model-based reconstruction of an epidemic using multiple datasets: understanding influenza A/H1N1 pandemic dynamics in Israel, J. Roy. Soc. Interface, 2016.

43. A. Zvuloni, Y.Artzi-Randrup, **G. Katriel**, Y. Loya, L. Stone, Modeling the impact of white-plague coral disease in climate change scenarios, PloS Comput. Biol. 11, e1004151 (2015).

42. **G. Katriel**, The Immediate Exchange model: an analytical investigation, Eur. Phys. J. B 88: 19 (2015).

41. M. Demuth, F. Hanauska, M. Hansmann, **G. Katriel**, Estimating the number of eigenvalues of linear operators on Banach spaces, J. Functional Analysis 268, 1032-105 (2015).

40. **G. Katriel**, Directed Random Market: the equilibrium distribution, Acta Applicandae Mathematicae, 139, 95-103 (2015).

39. D. Burg, D. Malkinson, **G. Katriel**, L. Wittenberg, Modeling the dynamics of soil erosion and vegetative control - catastrophe and hysteresis, Theoretical Ecology 8, 67-79 (2015).

38. **G. Katriel**, Gambler's Ruin: The Duration of Play, Stochastic Models 30 (2014), 251-271.

37. O. Barnea, A. Huppert, **G. Katriel**, L. Stone, Spatio-Temporal synchrony of Influenza in cities across Israel: the "Israel is one city" hypothesis, PLoS ONE 9 (2014), e91909.

36. **G. Katriel**, Convergence to an exponential distribution in a random market model, Applicable Analysis 6 (2014) 1256-1263.

35. **G. Katriel**, Existence of periodic solutions for the periodically forced SIR model, Nonlinear Oscillations 16 (2014), 359-366.

34. A. Huppert, **G. Katriel**, Mathematical modeling and prediction in infectious disease epidemiology, Clin. Microbiol. Infect. 19 (2003), 999-1005.

33. **G. Katriel**, Gambler's ruin probability – a general formula, Statistics & Probability Letters 83 (2013), 2205-2210.

32. R. Yaari, **G. Katriel**, A. Hupert, J.B. Axelson and L. Stone, Modeling seasonal influenza: the role of weather and punctuated antigenic drift, 2012, J. R. Soc. Interface 10 (2013).

31. M. Demuth, M. Hansmann and **G. Katriel**, Lieb-Thirring type inequalities for Schroedinger operators with a complex-valued potential, Integral Equations and Operator Theory 75 (2013), 1-5.

30. **G. Katriel**, Stochastic discrete-time age-of-infection epidemic models, Int. J. of

Biomathematics 6 (2013), 1250066.

29. A. Huppert, O. Barnea, **G. Katriel**, R. Yaari, U. Roll, and L. Stone, Modeling and Statistical Analysis of the Spatio-temporal Patterns of Seasonal Influenza in Israel, PloS ONE 7 (2012), e45107.

28. M. Hansmann, **G. Katriel**, From spectral theory to zeros of holomorphic functions, Bulletin London Math. Soc, 45 (2013), 103-110.

27. **G. Katriel** & L. Stone, Attack rates of seasonal epidemics, Mathematical Biosciences 235 (2012), 56-65.

26. **G. Katriel**, The size of epidemics in populations with heterogeneous susceptibility, J. Math. Biology 65 (2012), 237-262.

25. **G. Katriel**, Note on `Age, influenza and disease dynamics' by A.L. Greer, A.Tuite & D.N. Fisman, Epidemiology and Infection 189 (2011).

IF: 2.04, Q2, Google Scholar citations: 1

24. U. Roll, L. Stone, **G. Katriel**, R. Yaari , O. Barnea , E. Mendelson, M. Mandelboim, A. Huppert , Onset of a pandemic: characterizing the initial phase of the swine flu (H1N1) epidemic in Israel, BMC Infectious Diseases 11 (2011).

23. **G. Katriel** , R. Yaari, A. Huppert, U. Roll & L. Stone, Modelling the initial phase of an epidemic using incidence and infection network data: 2009 H1N1 pandemic in Israel as a case study, J. Roy. Soc. Interface 8 (2011), 856-867.

22. O. Barnea, R. Yaari, **G. Katriel** & L. Stone, Modelling seasonal influenza in Israel, Math. Bioscience & Engineering 8 (2011), 561-573.

21. M. Hansmann & **G. Katriel**, Inequalities for the eigenvalues of non-selfadjoint Jacobi operators, Complex Analysis & Operator Theory 5 (2011), 197-218.

20. **G. Katriel**, Epidemics with partial immunity to reinfection, Mathematical Biosciences 228 (2010), 153-159.

19. **G. Katriel** & L. Stone, Pandemic dynamics and the breakdown of herd immunity, PLoS ONE 5(3): e9565 (2009).

18. M. Demuth & **G. Katriel**, On finiteness of the sum of negative eigenvalues of Schrödinger operators, Bull. Kerala Math. Assoc. 2009, Special Issue, 87--104.

17. M. Demuth, M. Hansmann & **G. Katriel**, On the discrete spectrum of non-selfadjoint operators, J. Functional Analysis 257 (2009), 2742-2759.

16**. G. Katriel**, Synchronization of systems of oscillators coupled through an environment, Physica D: Nonlinear Phenomena 237 (2008), 2933-2944.

15. M. Demuth & **G. Katriel**, Eigenvalue inequalities in terms of Schatten norm bounds on differences of semigroups, and application to Schroedinger operators, Annales Henri Poincaré Math. Phys 9 (2008), 817-834.

14. **G. Katriel**, R. Kupferman & E. Titi Global Existence and long-time limit for a class of nonlinear infinite dimensional dynamical systems. J. Differential Equations 245 (2008), 2771-2784.

13. **G. Katriel**, Existence, uniqueness, and multiplicity of rotating fluxons in annular חח Josephson Junctions, Differential & Integral Equations, 20 (2007), 1167—1184.

12. **G. Katriel**, Existence of periodic solutions for enzyme-catalyzed reactions with periodic substrate input, Discrete & Continuous Dynamical Systems - Supplements (September 2007), 551-557.

11. R. Fattal, O.H. Hald, **G. Katriel** & R. Kupferman Global stability of equilibrium manifolds, and "peaking" behavior in quadratic differential systems related to viscoelastic models, J. Non-Newton. Fluid Mech. 144 (2007) 30-41.

10. **G. Katriel**, Existence of travelling waves in discrete sine-Gordon rings, SIAM J. Math. Analysis 36 (2005) 1434-1443.

9**. G. Katriel**, Stability of synchronized oscillations in networks of phase-oscillators, Discrete and Continuous Dynamical Systems B 5 (2005) 353-364.

8. **G. Katriel**, Solution of Rubel's question about differentially algebraic dependence on initial conditions. Illinois J. Math. 47 (2003), no. 4, 1261-1272.

7. **G. Katriel**, Periodic solutions of the forced pendulum: exchange of stability and bifurcations. J. Differential Equations 182 (2002), no. 1, 1--50.

6. **G. Katriel**, A uniqueness theorem for two-point boundary value problems. Appl. Analysis. 74 (2000), no. 3-4, 261--274.

5. **G. Katriel**, Uniqueness of periodic solutions for asymptotically linear Duffing equations with strong forcing. Topol. Methods Nonlinear Analysis. 12 (1998), no. 2, 263--274.

4. **G. Katriel**, Many periodic solutions for pendulum-type equations. Nonlinear Analysis. 34 (1998), no. 5, 687--699.

3. **G. Katriel**, Are the approximate and the Clarke subgradients generically equal? J. Math. Analysis Appl. 193 (1995), no. 2, 588--593.

2. **G. Katriel**, Surjection results for Fredholm mappings with singularities. Nonlinear Analysis. 23 (1994), no. 10, 1273--1275.

1. **G. Katriel**, Mountain pass theorems and global homeomorphism theorems. Ann. Inst. H. Poincaré Anal. Non Linéaire 11 (1994), no. 2, 189--209.

C. Articles in Conference Proceedings

Published

1. M. Demuth, M. Hansmann, **G. Katriel**, Eigenvalues of non-selfadjoint operators: a comparison of two approaches, Proceedings of Mathematical Physics, *Spectral Theory and Stochastic Analysis*, Goslar, 2011, 107-163, 2013.

D. Entries in Encyclopedias

L. Stone, F. Hilker & **G. Katriel**, SIR Models, in *Encyclopedia of Theoretical Ecology*, A. Hastings & L. Gross (eds.), University of California Press, 2012. (refereed).

E. Other Scientific Publications

Published

1. Huppert A., **Katriel H.**, Yaari R., Barnea O., Roll U., Stern E., Balicer R. and Stone L. (2010). Mathematical Models as a Tool for Studying and Developing Strategies in the Case of a Pandemic Influenza Outbreak. Harefuah, 149:4-8 (in Hebrew, English abstract).

Unpublished

2. G. Katriel, Synchronization in model networks of class I neurons, 2003 http://arxiv.org/abs/nlin.AO/0309041.

3. G. Katriel, From Rolle's theorem to the Sturm-Hurwitz theorem, 2003, http://arxiv.org/abs/math/0308159.

Google Scholar citations: 5.

4. G. Katriel, Periodic travelling waves in the theta model for synaptically connected neurons, 2003, http://arxiv.org/abs/nlin.PS/0409052.

5. G. Katriel, Asymptotic behavior of random walks with a jump at the origin, 2011, http://arxiv.org/abs/1108.5621 .

F. Other Works Connected with my Scholarly Field

1. Electronic book for study of middle school algebra (with Prof . M. Yerushalmi, \ Dr. B. Sternberg), 2001.

2. Lecture notes on Ordinary differential equations (available on moodle), 2017.