# CURRICULUM VITAE

STEVEN B. DAMELIN.

## 1. Introduction.


- Email: steve.damelin@gmail.com.
- Citizen: United States and South Africa.
- Professional Linkedin Page:
  https://www.linkedin.com/in/damelin-steven-613ba737/
- Professional Webpage;
  http://stevendamelin.com/


## 2. Education.

- (1996) Doctor of Philosophy, (Mathematics), University of the Witwatersrand, South Africa. Advisor: Doron Lubinsky, Full Professor, Department of Mathematics, Georgia Institute of Technology, USA.
- (1993) Master of Science (Mathematics), University of the Witwatersrand, South Africa:. Advisor: Doron Lubinsky, Full Professor, Department of Mathematics, Georgia Institute of Technology, USA.
- (1991) Bachelor of Science (Honors) (Mathematics) (summa cum laude), University of the Witwatersrand, South Africa.

## 3. Professional Career Summary.

- (November 2026-January 2027) Bavarian State's Visiting Professorship, Technische Hochschule Würzburg-Schweinfurt, Germany.
- (2026-Present) Lumerie Education research mentor (with particular interests in STEM and Artificial Intelligence research).
- (2024-Present) Associate Editor, Department of Mathematics, Zentralblatt Math Open, European Mathematical Society, FIZ Karlsruhe – Leibniz Institute for Information Infrastructure, Germany.
- (2019-Present) Mathematical Scientist and Educator, Ann Arbor, MI, USA.
- (2020-2021) Visting Scholar, University of Michigan, Ann Arbor, Michigan, USA
- (2013-2023) Sponsored Affiliate of the Department of Mathematics, University of Michigan, Ann Arbor, Michigan, USA.
- (2013-2019) Associate Editor, Mathematical Reviews, American Mathematical Society, Ann Arbor, MI, USA.
- (2000-2013) Full Professor (with tenure), Associate Professor (with tenure) and Assistant Professor, Department of Mathematics, Georgia Southern University, USA and Director of the Unit for Advances in Mathematics and its Applications which I founded in 2017.

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*Date*: September 19, 2026.

- (2005-2006) New Directions Professor, Institute for Mathematics and its Applications (IMA), University of Minnesota, USA.
- (1998-2000) Fall 2007, 2008-2011). Lecturer, Visiting Professor and Visiting Full Professor, Department of Mathematics and School of Computational and Applied Mathematics, University of the Witwatersrand, South Africa.
- (1999-2000) Visiting Professor, Department of Mathematics, Pennsylvania State University, USA.
- (1998-2000) Research Associate of the John Knopmacher Centre for Applicable Analysis and Number Theory, University of the Witwatersrand, South Africa.
- (1996-1997) Visiting Professor, Department of Mathematics, University of South Florida and Katholieke Universiteit, Leuven, Belgium.

## 4. Awards and Honors.

- (November 2026-January 2027) Bavarian State's Visiting Professorship, Technische Hochschule Würzburg-Schweinfurt, Germany.
- (2005-2006) New Directions Research Professorship (only awarded to two people worldwide during the academic year (2005-2006)), Institute for Mathematics and its Applications (IMA), University of Minnesota, USA.
- (2010-2013) National Flagship "Computational Research Initiative in Imaging and Remote Sensing", South African Center for High Performance Computing (CHPC), South Africa.
  (http://www.gradnet-db.wits.ac.za/Emails/chpc.html). $318,709.83.
- (2014-2017) Team member Nevada Mathematics Project: Collaborative Statewide mathematics initiative to improve K3-K12 mathematics instruction and student achievement. (www.nevadamathproject.com), Nevada Mathematics Project featured in NSF 2019 sponsored STEM for ALL video show case, State of Nevada, USA.
  (https://stemforall2019.videohall.com/presentations/1502). $300.000.
- (2018). IEEE Computational Intelligence Society Recognition and Service award.
- (2005-2008) United Kingdom Engineering and Physical Sciences Research Council, (EPSRC) Fellow.
- (Summer 2007). United States Air Force Office of Research Summer Fellow.
- (1996-1997) Freda Lawenski Fund for Academic Excellence Award.
- (1996-1997) Rosterholtz Memorial Scholar.
- (1995-1997) Foundation for Research and Development Post Doctorial Fellow.
- (2010-2011) American Mathematical Society Committee of Committees.
- (2008-2009) American Mathematical Society Research Communities Advisory Board.

## 5. Current research interests.

- Approximation theory, Harmonic Analysis, Numerical Analysis.
- Machine Learning, Manifold-Metric learning, Networks, Artificial intelligence, Quantum Computation.
- Vision, Alignment.
- Potential theory (confinenment, minimizers, many body systems), Codes.

6. Large Research grants and Large grant collaborations.

All non-US grant amounts have been converted to and listed in US Dollars.

- Team member on Nevada State, USA Grant: Nevada Mathematics Project (PI: Teruni Lamberg, University of Nevada): Collaborative Statewide mathematics initiative to improve K3-K12 mathematics instruction and student achievement, (2014-2017) $300.000. (www.nevadamathproject.com). Nevada Mathematics Project featured in NSF 2019 sponsored STEM for ALL video show case (https://stemforall2019.videohall.com/presentations/1502).
- National Flagship (Principle Investigators S. B. Damelin and M. Sears), "Computational Research Initiative in Imaging and Remote Sensing", South African Center for High Performance Computing (CHPC) (7/1/10-4/1/13), $318,709.83. (Michael Sears became the Principal Investigator of this award after 4/11). (http://www.gradnet-db.wits.ac.za/Emails/chpc.html).
- NSF-DMS-0555839 (Principle Investigator S. B. Damelin), "Approximation, Equilibrium Measures and Discrepancy over Domains, Finite Fields and Smooth Manifolds, (07/01/06-07/01/09), $194,636.
- Air Force Summer Faculty Fellowship (Principle Investigator S. B. Damelin), "Model-Based Object Recognition, (Summer 2007), $14,673.11.
- EP-C0002850-EPSRC Fellowship (Principle Investigators* S. B. Damelin and J. Levesley), "Approximation, Integration and Partial Differential Equations on Smooth Manifolds, (05/01/05-05/31/08), $146. 93.78. (*J. Levesley is formally the Principal Investigator on the EPRSC webpage due to the nature of the fellowship and UK institution rules. The fellowship is awarded based on the quality of the Fellow S.B. Damelin).
- NSF DMS-1100964 (Principle Investigator A. Sills, Co-Principle Investigator, S. B. Damelin), "q series 2011: An international conference on q series, partitions and special functions honoring M Ismail and D Stanton for their valuable contributions to Number theory and Special Functions throughout their careers, (11/10-4/13), $30,000.00.
- WCI-99-199900-Centre for Applicable Analysis, WITS (Principle Investigator, S. B. Damelin), "Collaborative Research with Pennsylvania State University", (8/1999- 8/2000), $32000.00.
- WC-96-896234-University of the Witwatersrand Council Research Grant, (Principle Investigator, S. B. Damelin), "Collaborative Research with the University of South Florida", (8/1996-6/1997), $42000.00.

6.1. **Research support.**

- National Science Foundation (NSF), USA.
- United Kingdom Engineering and Physical Sciences Research Council, (EPSRC).
- South African Center for High Performance Computing (CHPC).
- Air Force of Scientific Research-DoD, USA.
- Nevada State, USA.

6.2. **Grant Reviews: Panels for large funding agencies and research institutes.**

- (2000-Present): Review Proposals for NSF, DoD, Deutsche-Forschungsgemeinschaft (Germany Research Foundation). Grant Panels: NSF (East Asia, Summer Student, CSEMS, EMD).

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## 7. Research output

### 7.1. **Books.**

(5) S.B. Damelin, "Approximation, learning and potentials", in preparation.
(4) S. B. Damelin, "Near extensions and Alignment of data in $\mathbb{R}^n$: Whitney extensions of smooth near isometries, shortest paths, equidistribution, clustering and non-rigid alignment of data in Euclidean space", John Wiley & Sons, November 2023 (164 pages)
- Code: K. Hamm, https://github.com/stevendamelinkeatonhamm/damelinhamm slowtwistsslides.

(3) S. B. Damelin and W. Miller, Mathematics of Signal Processing, Cambridge Texts in Applied Mathematics (No. 48), February 2012. (440 pages).
(2) S. B. Damelin, H. Guo and W. Miller, Solutions to S. B. Damelin and W. Miller, Mathematics and Signal Processing, in Resources: Mathematics and Signal Processing, Cambridge Texts in Applied Mathematics (No. 48), 2017. (136 pages).
(1) S. B. Damelin and W. Ma, Topics in Integrable Systems, Special Functions, Orthogonal Polynomials and Random Matrices, Journal of Computational and Applied Mathematics, Special Volume, 202, (1), May 2007, pp 1-154. (154 pages).

### 7.2. **Books: Editing and Proof Reading.**

(2) (Edited): A. Krall, Hilbert Space, Boundary Value Problems and Orthogonal Polynomials, Birkhauser 2002.
(1) (Selected Page Proof Reading): E. B. Saff, V. Totik, Logarithmic potentials with external fields, Springer 1997.

### 7.3. **Papers.**

(83) Kingsley Yeon, Steven B. Damelin and Alec Greene, Typical-Case Gate Approximation and Arithmetic Obstructions in Quaternionic Single-Qubit Compilation, submitted for consideration for publication, https://arxiv.org/abs/1506.05785.
(82) S. B. Damelin and R. Shu, Annulus-shaped minimizers for interaction energies, preprint.
(81) S. B. Damelin and R. Shu, A family of interaction energy minimizers supported on two intervals, to appear in Special Volume of Discrete and Continuous Dynamical Systems.-A Honoring Centennial Birth of Professor Peter Lax: https://arxiv.org/abs/2510.11662.
(80) K. Yeon, S. B. Damelin and M. Werman, Exponential convergence of deep composite polynomial approximation for cusp-type functions, submitted for consideration for publication,
(79) K. Yeon and S. B, Damelin, Uniform Approximation of Functions with Asymmetric Growth and Decay by Deep Weighted Polynomials, submitted

for consideration for publication,
https://arxiv.org/abs/2506.21306

(78) Yikun Bai, Huy Tran, Steven B. Damelin and Soheil Kolouri, Partial Transport for Point-Cloud Registration, arxv:2309.15787, Sampl. Theory Signal Process. Data Anal. 23, No. 1, Paper No. 4, 51 p. (2025).

(77) Joel Nathe and S. B. Damelin, Subharmonic kernels and equilibrium measures, arxiv: 2410.01489, submitted for consideration for publication.

(76) A. Anderson and S. B. Damelin, Toward a Characterization of Packing and Covering Asymptotics via Minkowski Contents, arxiv:2408.07634, Journal of Complexity, Volume 92, February 2026.

(75) J. Sun and S. B. Damelin, A Note on an Analytic Approach to the Problem of Matroid Representability, The Cardinality of Sets of k-Independent Vectors over Finite Fields and the Maximum Distance Separable Conjecture, arxiv 1506.06425, submitted for consideration for publication.

(74) S. B. Damelin and M. Werman, On best uniform approximation of finite sets by linear combinations of real valued functions, arxiv 2204.07949, submitted for consideration for publication.

(73) Gupreet Kalsi and Steven B. Damelin, Well Separated Pair Decomposition and power weighted shortest path metric algorithm fusion, arxiv 2103.11216, in "Whitney extensions of smooth near isometries, shortest paths, BMO, equidistribution, clustering and non-rigid alignment of data in Euclidean space", John Wiley & Sons 2024.

(72) S. B. Damelin, K. Diethelm, Analytic and numerical analysis of singular Cauchy integrals with exponential-type weights, arxiv 1711.09495, Numerical Functional Analysis and Optimization, Volume 43, 2022, Issue 13.

(71) J. Sun, S. B. Damelin, D. Kaiser and S. Bora, An algebraic-coding equivalence to the maximal coding separable conjecture, arxXv 1705.06136, Involve, 17-3 (2024), 363–372.

(70) Damelin, S.B., Ragozin, D.L., Werman, M.: On min-max affine approximants of convex or concave real-valued functions from $\mathbb{R}^k$, Chebyshev equioscillation and graphics. In: Hirn, M., Li, S., Okoudjou, K.A., Saliani, S. (eds.) Excursions in Harmonic Analysis. Applied and Numerical Harmonic Analysis, vol. 6. Springer, Cham (2021).

(69) T. Lamberg, S. B. Damelin, P. Lakey, D. Moss and L. Koyen, Visualizing integers, distance and groups on number lines, The Australian Mathematical Education Journal (AMEJ),(2)(11)(4), 2020.

(68) D. McKenzie and S. B. Damelin, Power weighted shortest paths for clustering Euclidean data in Foundations of Data Science, American Institute of Mathematical Sciences, Volume 1, Issue 3, September 2019, pp 32-42.

(67) N. Charalambides, S. B. Damelin and B. Swartz, Isometries and equivalences between point configurations extended to e-diffeomorphisms, in "Whitney extensions of smooth near isometries, shortest paths, BMO, equidistribution, clustering and non-rigid alignment of data in Euclidean space", John Wiley & Sons 2024.

(66) S. B. Damelin and R. Renya, On the structure of the Littlewood polynomials and their zero sets, arxiv 1504.08058, submitted for consideration for publication.

(65) M. Hua, S. B. Damelin, J. Sun and M. Yu, The truncated and supplemented pascal matrix and applications, Involve, Vol. 11, No. 2, 2018.
(64) S. B. Damelin and N. Hoang, On surface completion and image in painting by biharmonic functions: Numerical aspects, International Journal of Mathematics and Mathematical Sciences, vol. 2018.
  – Code: Implementation in the scikit-image package (published) of "On surface completion and image in painting by biharmonic functions: Numerical aspects, International Journal of Mathematics and Mathematical Sciences, vol. 2018". Link.
  https://scikit-image.org/docs/stable/api/skimage.restoration.html
  /highligh/inpaintbiharmonic.
(63) Sung J. Hwang, Steven B. Damelin, Alfred O. Hero III, Shortest path through random points, The Annals of Applied Probability, 2016, Vol. 26, No. 5, pp 2791-2823.
(62) S. B. Damelin, Y. Gu, D. Wunsch and R. Xu, Fuzzy adaptive resonance theory, diffusion maps and their applications to clustering and bi clustering, Math. Model. Nat. Phenom. Vol. 10, No 3, 2015, pp 206-211.
(61) R. Raich, S. B. Damelin and A. Hero, Classification Constrained Dimensionality Reduction, arXiv:0802.2906.
(60) Kerry Cawse, Steven B. Damelin, Amandine Robin, Michael Sears, A parameter free approach for determining the intrinsic dimension of a hyperspectral image using Random Matrix Theory, IEEE Transaction on Image Processing, 22(4)(2013), pp 1301-1310.
(59) D. Benko, S. B. Damelin and P. Dragnev, On supports of equilibrium measures with concave signed equilibria and the Iterated Balayage Algorithm, Journal of Computational Analysis and Applications, 9 (2012), pp 8-15.
(58) Louis du Plessis, Rui Xu, Steven Damelin, Michael Sears and Donald Wunsch, Reducing dimensionality of hyperspectral data with diffusion maps and clustering with K-means and fuzzy art, Int. J. Systems Control and Communications, (3) (2011), pp 232-251.
(57) S. B. Damelin, F. Hickernell, D. Ragozin and X. Zeng, On energy, discrepancy and G-invariant measures on measurable subsets of Euclidean space, Journal of Fourier Analysis and its Applications (2010) (16), pp 813-839.
(56) Cawse K, Sears M, Robin A, Damelin S. B, Wessels K, van den Bergh F, Mathieu R, Using random matrix theory to determine the number of endmembers in a hyperspectral image, WHISPERS 2010, June 14-16 2010, Reykjavik, Iceland.
(55) S. B. Damelin, J. Levesley, D. L. Ragozin and X. Sun, Energies, Group invariant kernels and numerical integration on compact manifolds, Journal of Complexity, 25(2009), pp 152-162.
(54) J. H. Ann, S. B. Damelin and P. Bigeleisen, Medical image segmentation using modified Mumford segmentation methods, Ultrasound-Guided Regional Anesthesia and Pain Medicine, eds P. Bigeleisen, Chapter 40, Birkhauser, 2009.
(53) Michael Mitchley, Michael Sears and Steven Damelin, Target detection I Hyperpectral mineral data using wavelet analysis, Proceedings of the 2009 IEEE Geosciences and Remote Sensing Symposium, Cape Town, pp 23-45.

(52) Louis du Plessis, Rui Xu, Steven Damelin, Michael Sears and Donald Wunsch, Reducing dimensionality of hyperspectral data with diffusion maps and clustering with K-means and fuzzy art, Proceedings of IJCNN 2009, pp 32-36.

(51) S. B. Damelin, G. Mullen and G. Michalski, The cardinality of sets of $k$-independent vectors over finite fields, Monatsh.Math, 150(2008), pp 289-295.

(50) Kerry-Anne Cawse, Steven Damelin, Richard McIntyre, Michael Mitchley, Louis du Plessis and Michael Sears, An Investigation of data compression for Hyperspectral core image data, Proceedings of the Mathematics in Industry Study Group 2008, South Africa, 2008, pp. 1-25.

(49) Rui Xu, Steven B. Damelin, Boaz Nadler, and Donald C. Wunsch II, Clustering of high-dimensional gene expression data with feature filtering methods and diffusion maps, in Bio Medical Engineering and Informatics, 2008. BMEI 2008, Vol 1, pp 245-249, IEEE 2008.

(48) S. B. Damelin, A Walk through Energy, Discrepancy, Numerical Integration and Group Invariant Measures on Measurable Subsets of Euclidean Space, Numerical Algorithms, Volume 48 Number 1-3(2008), pp 213-235.

(47) S. B. Damelin, On bounds for diffusion, discrepancy and fill distance metrics, Springer Lecture Notes in Computational Science and Engineering, (2008) Vol. 58, pp 32-42.

(46) S. B. Damelin, Advances on regularity and dislocation properties of energy minimizing configurations, discrepancy, manifold learning and their applications, Algorithms for Approximation, (2007), pp 369-400.

(45) S. B. Damelin and A. J Devaney, Local Paley Wiener theorems, Proceedings of Inverse Problems Symposium, East Lansing, Michigan, pp 1-12, June 2007.

(44) S. B. Damelin and A. J. Devaney, Local Paley Wiener theorems for analytic functions on the unit sphere, Inverse Problems, (23)(2)(2007), pp 463-475.

(43) S. B. Damelin, J. Levesley and X. Sun, Energy estimates and the Weyl criterion on compact homogeneous manifolds, Algorithms for Approximation, (2007), pp 359-368.

(42) Rui Xu, Steven B. Damelin, and Donald C. Wunsch II, Applications of diffusion maps in gene expression data-based cancer diagnosis analysis, In Proceedings of the 29th Annual International Conference of IEEE Engineering in Medicine and Biology Society, Lyon, France, pp. 4613-4616, August, 2007.

(41) S. B. Damelin and V. Maymeskul, Minimal discrete energy problems and numerical integration on compact sets in Euclidean Spaces, Algorithms for Approximation, (2007) pp 359-368.

(40) Y. Ma, S. B. Damelin, O. Masoud and N. Papanikolopoulos, Activity recognition via classification constrained diffusion maps, ISCV (International Symposium of Computer Vision), 2006, pp 1-8.

(39) D. Benko, S. B. Damelin and P. Dragnev, On the support of the equilibrium measure for arcs of the unit circle and real intervals, Electronic Transactions on Numerical Analysis, (25)(2006), pp 27-40.

(38) S. B. Damelin, V. Maymeskul, On point energies, separation radius and mesh norm for s-extremal configurations on compact sets in $\mathbb{R}^n$, Journal of Complexity, Volume 21(6)(2006), pp 845-863.
(37) S. B. Damelin, Pointwise bounds of orthogonal expansions on the real line via weighted Hilbert Transforms, Advances in Computational Mathematics (2006), pp 1-21.
(36) S. B. Damelin and H. S. Jung, Pointwise convergence of derivatives of weighted Lagrange interpolation polynomials, Journal of Computational and Applied Mathematics, Volume 173, (2)(2005), pp 303-319.
(35) S. B. Damelin, Asymptotics of recurrence coefficients for orthonormal polynomials on the line-Magnus's method revisited, Mathematics of Computation, 73(2004), pp 191-209.
(34) S. B. Damelin and K. Diethelm, Weighted polynomial approximation and Hilbert Transforms: Their connections to the numerical solution of singular integral equations, Proceedings of Dynamic Systems and Applications, Volume 4 (2004), pp 20-26 Ed. G. S. Ladde, N.G. Medhin. M. Sambandham.
(33) S. B. Damelin and K. Diethelm, Numerical solution of Fredholm integral equations on the line, Journal of Integral equations and Applications, Volume 13(3), 2004, pp 273-292.
(32) S. B. Damelin and P. Grabner, Energy functionals, numerical integration and asymptotic equidistribution on the sphere, Journal of Complexity, 19(2003), pp 231-246. (Postscript) Corrigendum, Journal of Complexity, (20)2004), pp 883-884.
(31) S. B. Damelin, H. S. Jung and K. H. Kwon, Mean convergence of extended Lagrange interpolation for exponential weights, Acta Applicandae Mathematicae, 76(2003), pp 17-36.
(30) S. B. Damelin, On the maximum modulus of weighted polynomials in the plane, a theorem of Rakhmanov, Mhaskar and Saff revisited, Journal of Computational and Applied Mathematics, vol. 155 (2003), pp 455-459.
(29) S. B. Damelin, Marcinkiewicz-Zygmund inequalities and the Numerical approximation of singular integrals for exponential weights: Methods, Results and Open Problems, some new, some old; Journal of Complexity, 19(2003), pp 406-415.
(28) S. B. Damelin, Weighted polynomial approximation on discrete sets, Monatshefte fur Mathematik, (138)2)(2003), pp 111-131.
(27) S. B. Damelin, G. Mullen, G. Michalski and D. Stone, On the number of linearly independent binary vectors of fixed length with applications to the existence of completely orthogonal structures, Monatsh Math, (1)(2003), pp 1-12.
(26) B. Bajnok, S. B. Damelin, J. Li and G. Mullen, A constructive method of scattering points on $d$-dimensional spheres using finite fields, Computing (Springer), 68 (2002), pp 97-109.
(25) S. B. Damelin, The Hilbert transform and orthonormal expansions for exponential weights, Approximation Theory X: Abstract and Classical Analysis, Chui, Schumaker and Stoekler (eds), Vanderbilt Univ. Press (2002), pp 117-135.

(24) S. B. Damelin, H. S. Jung and K. H. Kwon, Converse Marcinkiewicz-Zygmund inequalities on the real line with applications to mean convergence of Lagrange interpolation, Analysis, 22(2002), pp 33-55.
(23) S. B. Damelin, The distribution of general interpolation arrays for exponential weights, Electronic Transactions of Numerical Analysis, Volume 12, 2002, pp 12-20.
(22) S. B. Damelin, H. S. Jung and K. H. Kwon, Mean convergence of Hermite-Fej'er and Hermite interpolation of higher order for Freud weights, Journal of Approximation Theory, 113 (2001), pp 21-58.
(21) S. B. Damelin, H. S. Jung and K. H. Kwon, A note on mean convergence of Lagrange interpolation in $Lp$, Journal of Computational and Applied mathematics, 133 (1-2) (2001), pp 277-282.
(20) S. B. Damelin, H. S. Jung and K. H. Kwon, On mean convergence of Hermite-Fej'er and Hermite interpolation for Erdős weights on the real line, Journal of Computational and Applied Math, Volume 137 (2001), pp 71-76.
(19) S. B. Damelin, H. S. Jung and K. H. Kwon, Necessary conditions for mean convergence of Lagrange interpolation for exponential weights, Journal of Computational and Applied Mathematics, Volume 132(2)2001), pp 357-369.
(18) S. B. Damelin and K. Diethelm, Boundedness and uniform approximation of the weighted Hilbert transform on the real line, Numer. Funct. Anal.and Optimiz., 22(1 and 2) (2001), pp 13-54.
(17) S. B. Damelin, Another look at an old paper of Geza Freud, Approximation Theory X, Charles Chui, Larry Schumaker and Joachim Stoekler (eds.)(2001), pp. 1-3.
(16) S. B. Damelin, P. Dragnev and A. Kuijlaars, The support of the equilibrium measure for a class of external fields on a finite interval, Pacific Journal of Mathematics, Volume 199 (2)(2001), pp 303-321.
(15) L. H. Damelin, S. Volles, J. M. Whitcutt, S. B. Damelin, J. J. Alexander, Hormesis: A stress response in cells exposed to low levels of heavy metals, Human and Experimental Toxicology, Volume 19,7: (2000), pp 420-430.
(14) S. B. Damelin, Smoothness theorems for generalized symmetric Pollakzek weights on $(-1, 1)$, Journal of Computational and Applied Mathematics., 101 (1999), pp 87-103.
(13) S. B. Damelin and K. Diethelm, Interpolatory product quadratures for Cauchy principal value integrals with Freud weights, Numer. Math. 83 (1999), pp. 87-105.
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(11) S. B. Damelin and A. Kuijlaars, The support of the extremal measure for monomial external fields on [-1,1]., Trans.Amer.Math. Soc. 351 (1999), 4561-4584.
(10) S. B. Damelin, A characterization of smoothness for Freud weights, Journal of Computational and Applied Mathematics., 99(1998), pp 463-473.
(9) S. B. Damelin, The weighted Lebesgue constant of Lagrange interpolation for exponential weights on $[-1, 1]$, Acta-Mathematica (Hungarica)., 81(3) (1998), pp 211-228.

(8) S. B. Damelin, The Lebesgue constant of Lagrange interpolation for Erdős weights, J. Approx. Theory., Volume 94, 2, (1998), pp 235-262.
(7) S. B. Damelin and D. S. Lubinsky, Jackson theorems for Erdős weights in $L_p$, J. Approx. Theory., Volume 94, (3) (1998), pp 333-382.
(6) S. B. Damelin, Converse and smoothness theorems for Erdős weights in $L_p$, J. Approx. Theory., Volume 93, (3)1998), pp 349-398.
(5) S. B. Damelin and D. S. Lubinsky, Necessary and sufficient conditions for mean convergence of Lagrange interpolation for Erdős weights II, Canad. Math. J., (40)(1996), pp 737–757.
(4) S. B. Damelin and D. S. Lubinsky, Necessary and sufficient conditions for mean convergence of Lagrange interpolation for Erdős weights, Canad. Math. J., (40)(1996), pp 710-736.
(3) S. B. Damelin, Marchaud inequalities for a class of Erdős weights, Approximation Theory VIII-Vol I (1995), Approximation and Interpolation, Chui et al, pp 169–175.
(2) S. B. Damelin, Weighted approximation for Erdős weights, Disser. Math., Vol 1 (1996), pp 163–171.
(1) D. Greenblatt and S. B. Damelin, Laminar boundary layers subject to high frequency travelling–wave fluctuations, AJAA Journal., Vol. 31, 5 (1993), pp 957–959.

### 7.4. **Selected invited talks/visits) at interdisciplinary institutes/centers: 2010-2023.**

- Visit: ICERM, Brown University, 2023 (Workshop: Mathematical challenges in Neuronal Network Dynamics (September 18-22), Workshop: Neural Coding and Combinatorics (October 30-November 3) as part of the fall program: Math+Neuroscience: Strengthening the interplay between Theory and Mathematics, Sept 6-Dec 8, 2023.
- Visit: ICERM, Brown University, 2023 (May)
- Talk ICERM, Brown University, 2018.
- Talk: Einstein Institute for Mathematics, Hebrew University, 2017.
- Visit: American Institute of Mathematics, 2017.
- Talk: Park City Institute-Institute for Advanced Study, Princeton, 2014.
- Talk: Navy Research Lab, Washington DC, 2012.
- Visits and Talks: IMA: 2002, 2005, 2006, 2008, 2009, 2011.
- Visit: SAMSI Institute, Research Triangle, 2007, 2012.
- Talk: SMART Airforce Research Lab, 2007.
- Talk: Large Data sets, GIS and Geometry of Data, University of Leicester, England, 2006.
- Talk: Mathematical Institute in Oberwolfach, Germany, 2001.
- Talk: High Performance Computing, AIMS Institute, Cape Town, 2010.

### 7.5. **Selected talks 1995-Present.**

- (Summer 2025) Vanderbilt University, Shanks 2025, "On energy, discrepancy, group invariant measures, alignment of neural data and Whitney extensions"
- (Spring 2025) (Invited Speaker) 16th Annual Probability and Statistics Day at University of Maryland, Baltimore County, "The intrinsic geometry of

representation and alignment of neural biological data within a neural state space and biological neural manifolds".

- (Spring 20250) University of Texas, El Paso, "The intrinsic geometry of representation and alignment of neural biological data within a neural state space and biological neural manifolds"
- (Fall 2024) Halıcıoğlu Data Science Institute, University of California, San Diego "Whitney extensions and Shortest paths".
- (Fall 2024) SUNY (Albany),"Shortest paths on Riemannian manifolds".
- (Fall 2024) UMBC, "Alignment, Whitney, Interpolation and Shortest paths in Euclidean Space".
- (March 2024) John Hopkins, "Alignment of data in Euclidean space".
- (January 2023) Hebrew University, Israel (Near Whitney extensions, Shortest paths with applications. Host: Michael Werman, Ami Weisel), Ben Gurion University, Israel (Near Whitney extensions, Shortest paths with applications. Host: Aryeh Kontorovich), Technion, Israel (Near Whitney extensions, Shortest paths with applications: Host: Nadav Dym), Ariel University, Israel (Near Whitney extensions, Shortest paths with applications: Host Elad Horev and Roi Weiss), Bari-lan University, Israel (Near Whitney extensions, Shortest paths with applications.)
- Vanderbilt, Princeton, Technion, Einstein Institute,-Hebrew University, The Courant Institute, Yale, University of Maryland, University of Minnesota, Georgia Institute for Technology, University of Michigan, Vanderbilt University, Texas AM University, Pennsylvania State University, University of Maryland, Tel Aviv University, University of Braunshweig, Vanderbilt, , KU Leuven, City University-Hong Kong, University of Leicester, University Carlos 3, Georgia Southern, University of Cape Town, University of the Witwatersrand, Georgia State University, University of Georgia, University of Maryland, Illinois Institute of Technology, University of South Carolina, Bar-Ilan University, University of Minnesota, Duke, University of Iowa, IUPUI, Ohio-State University, Potenza University-Italy, University of South Florida, University of Pretoria, University of Washington, Joint Mathematics Meetings, Xieming (China, University of Michigan (Flint))

7.6. **Selected conference invited talks: 1996-2020.**

- Invited talk, 2024, ML Conference, Eastern Michigan University, "Learning manifolds in high dimensional Euclidean space and Whitney Extensions", April, 2024.
- Invited talk, AMS Special Session in the Spring Eastern Virtual Sectional Meeting on orthogonal polynomials, hypergeometric functions, q-series and generalizations, organizer: Howard Cohl, NIST, "Whitney extensions and orthonormal expansions", April 2-3 2023.
- Invited talk, Special session on Mathematics of Digital Libraries, Joint mathematics meetings, Denver 2020, "Matching in a Digital Library".
- Invited talk, 10th Workshop Structural Dynamical System: Computational Aspects, Bari Italy: June 12-June 15, 2008, "Whitney extensions of small distortions in $\mathbb{R}^D$".
- Invited talk, Special session on Foundations of computational mathematics, AMS Central Meeting, Loyola University, "Matching data in Euclidean space", (October 2015).

- Navy Research Lab talk, "A random walk through compressed sampling, signal identification machine learning, pattern recognition, clustering and sparse dictionaries, February 2012.
- 2010 High Performance Computing, Cape Town, South Africa, Dec 7-9, 2010, "Diffusion maps in Hyperspectral Imaging and Clustering. Mathematics in Industry, AIMS, Cape Town 11-15, January 2010, "Rigid Motion-matching in Medical Image Processing.
- SMART AFRL, July 2007, "Spectral Diffusion as a means to extract features from nerve and radar images".
- Workshop on High Dimensional Inference and Random Matrices workshop, SAMSI Institute, North Carolina January 16-19, 2007 , "Kernels, Metrics and Energy."
- Large Data sets, GIS and Geometry of Data, University of Leicester, August 2006, "Kernel methods in data analysis".
- International Conference on Algorithms for Approximation 5, University of Leicester, England, 18 July-23 July 2005, "Discrepancy on smooth manifolds."
- Workshop on approximation theory, International Conference on the Interactions between Wavelets and Splines, UGA, May 16-19, 2005, "Extremal configurations on smooth manifolds."
- Workshop on approximation and computational complexity: Interdisciplinary Aspects, AMS, Bowling Green, Kentucky, March 2005, "Numerical solution of integral equations on domains."
- Workshop on special functions and integrable systems, AMS, National Meetings, January 2005, "Weighted polynomial approximation on discrete sets."
- Workshop on theory and application of orthogonal polynomials, AMS, Phoenix, January 2004, "Bounds on Discrete Polynomials and Discrete Extremal Problems".
- Workshop in differential and integral equations, "International conference for Dynamic systems and differential equations", Atlanta, May 2003, "Numerical solution of Fredholm integral equations on the line".
- Workshop in spherical designs and coding theory, National Meetings, Baltimore, January 2003, "Finite Fields and constructions of Codes".
- National conference in honor of Allan Krall, Professor Emeritus, Penn State University, Knoxville, TN, October 2002: Talk "Orthogonal Polynomials and Constrained Minimizers revisited".
- FOCM workshop on numerical integration and complexity, Institute for Mathematics and its Applications, University of Minnesota, August 2002, "Construction of points that are well distributed on spheres using ones and zeroes".
- Workshop in numerical linear algebra, AMS Sectional meeting, Atlanta, March 2002: "Asymptotics of Recurrence Coefficients for Orthogonal Polynomials for Exponential Weights with one point of Non Analyticity."
- Workshop in approximation theory, AMS Sectional meeting, University of Tennessee, October 15-16th 2001, "Distribution of points on d-dimensional spheres using finite fields."

- Mathematical Institute in Oberwolfach, Germany, "Numerical integration and its complexity", Organizers: Prof H. Wozniakowski, Prof G. Wasilkowski and Prof K. Petras, "Numerical integration on d spheres", November 2001.
- Workshop on approximation theory, AMS Sectional meeting, University of South Carolina, March, 16-18 2001: "The distribution of interpolation points for exponential weights".
- Workshop in numerical integration and its complexity, Mathematical Institute in Oberwolfach, Germany, November 2000.
- Workshop on computational linear algebra, Seventh National SIAM conference on Applied Linear Algebra, Raleigh, North Carolina, October 2000: "Combinatorial designs and linear independence."
- Approximation Theory Summer School, Potenza University, Italy, September 1997 "Orthogonal Polynomials on the Real Line".
- Workshop on approximation theory and numerical analysis, Vico Equense, Italy, September 1997, "Constrained Approximation and its Applications".
- Workshop on approximation theory, The Seventh International Conference on Computational and Applied Mathematics, Leuven, July 1996: "Lagrange interpolation for exponential weights on the line".

7.7. **International and national workshops/conferences organized and diversity.**

- June 2026: (with UMBC) UMBC-ASA Partner AIC's (African International Conferences on Statistics), South Africa (co-funded by National Science Foundation.
- September 2022: Special Session (with Keaton Hamm): Optimal transport, manifold learning and dimension reduction (I-II), 2022 SIAM Conference on Mathematics of Data Science.
- Michigan Community College Gender and Sexuality Conference, Washtenaw Community College, Special session (with Maty Muldone and Benson Gitau), October 18-19, 2019. Title: "Raising a queer family and international love".
- AMS workshop (jointly with Nir Sharon, Princeton/Tel Aviv): "Extensions-interpolation-shape matching in $\mathbb{R}^d$, symmetry-invariance, algorithms and related topics", University of Michigan, October 20-21, 2018. The workshop included national and international speakers, both male and female speakers and students to promote diversity.
- Special session in Approximation Theory (with David Benko) at the 36th SIAM Southeast Atlantic Section Conference, University of Alabama, Huntsville, March 2012.
- Mini symposium in honor of David Ragozin's 70th birthday, Nashville, May 2011.
- Number Theory and Special Functions, an International Conference in honor of the 60th Birthday of Prof D. Stanton and 65th Birthday of Prof M. Ismail. (with Prof A. Sills), March 14-16, 2011.
- Workshop on point cloud matching imaging, 2010 National Conference for High Performance Computing, Cape Town, South Africa, Dec 7-9, 2010. Organizers: S. B. Damelin and M. Sears.
- MSIG (mathematics in industry study group): Workshop for undergraduate and graduate students, University of Cape Town and AMIS, January 2010.

(With David Mason, Michael Sears), Identification of Nerves in Upper Body Ultrasounds.

- MSIG (mathematics in industry study group): Workshop for Undergraduate and Graduate Students, University of Cape Town and AMIS, January 2010. (With David Mason, Michael Sears), Identification of Nerves in Upper Body Ultrasounds. Image Processing in $\mathbb{R}^d$.
- IEEE IGARSS09 (IEEE Geology and Remote Sensing 09), Cape Town, Spring 2009 (Michael Sears (University of the Witwatersrand), Prof A. Banjaree and Prof J. Broadwater (Johns Hopkins), "Hyperspectral imaging and its Applications in Geology and Remote Sensing I-II".
- Special Session, "CMMSE (Computational Methods in Science and Engineering)"', ITT, Chicago, June 2007 (with Fred Hickernell). Title: "On the curse of dimension in discrepancy and approximation: Methods and Advances."
- International committee: "Large Data sets, GIS and Geometry of Data: Two coupled international research workshops", University of Leicester, August, 2006.
- Special Session, "International Conference on Algorithms for Approximation 5", University of Leicester, England, July 18-25, 2005: (With Jeremy Levesley). Title: "Aspects of Approximation on Domains and Manifolds".
- Special Session, American Mathematical Society, Bowling Green, Kentucky, March, 18-19, 2005. (With David Benko (Western Kentucky University)). Title: "Numerical Analysis, Approximation and Computational Complexity: Interdisciplinary Aspects".
- Special Session, American Mathematical Society, National Meetings, Atlanta, GA, January, 5-7, 2005. (With Jinho Baik (University of Michigan) and Peter Miller (University of Michigan)). Title: "Orthogonal Polynomials-Random Matrices-Integrable Systems: Interdisciplinary Aspects."
- Special Session, American Mathematical Society, South Eastern Meeting, Atlanta, GA, March, 12-14, 2002. (With Michele Benzi (Emory) and Jim Nagy (Emory)). Title: "Numerical Linear Algebra and its Applications."

## 8. Teaching.

### 8.1. **Postdocs/PhD independent research. *(I am not the advisor for the PhD student nor the faculty member under which the postdoc works/funded.)**

- (2024-Present) PhD (Hong Kong National University), Sergei Novozhilov, Neural networks and approximation theory.
- (2023-Present) PhD (Johns Hopkins), Nolga Mudrik, Neural manifolds and Allignment of Neural Spikes.
- (2019-2020) Postdoc: Joe Kiel (Princeton), Algebraic geometry/vision. Now faculty at University of Texas, Austin, USA.
- (2018-2019) PhD: Daniel McKenzie (University of Georgia), Shortest paths-Probability. Postdoc (UCLA). Now faculty at Colorodo School of Mines, USA.
- (2018-2019) Postdoc: Keaton Lamm (University of Arizona), Harmonic Analysis. Now faculty at University of Texas, Arlington, USA.
- (2017-2018) PhD: Han Guo (University of Michigan), Signal Processing.

- (2014-2018) Postdoc: Ming Yu (Australian National University), Matroids-Codes. Now faculty at Australian National University, Australia.
- (2007-2008) Postdoc: Raviv Raich (University of Michigan), Signal processing/computer vision. Now faculty: Oregon State University, USA.
- (2007-2008) Postdoc: Marc. Kliger (University of Michigan), Signal processing/computer vision. Now Research Scientist, Intel Corporation, Israel.
- (2005-2006) Postdoc: J-Ha An (IMA, University of Minnesota), Imaging/computer vision. Now faculty at California State University, USA.
- (2006-2010) Postdoc: Rui. Xu, (University of Missouri Rolla), data analysis. Now at GE Global Research, USA.

8.2. **PhD supervision.**

- (2006-2011) Kerry Nicholson (nee Cawse) (University of the Witwatersrand-joint with Michael Sears-Amandine Roberts), Imaging and Random Matrix Theory, 2009-2011. Now at NASA Jet Propulsion Laboratory, Pasadena, California), USA.
- (2006-2011) Sunjin Hwang (University of Michigan-joint with A. Hero), Probability, Statistical Learning Theory. Now at Google.
- (2010-2013) Rochelle Randall (University of Leicester), Approximation theory.

8.3. **External PhD/Masters committees.**

- (2017) Tshepiso Mothele, "Boundary determination of mineral regions in hyperspectral drill core imager data", University of the Witwatersrand, [Masters committee].
- (2011) Kerry Cawse, "Hyperspectral Imaging and Random Matrix Theory", University of the Witwatersrand, [PhD committee].
- (2011) Sun Jin Hwang, "Geometric representations of high dimensional data", University of Michigan, [PhD committee].
- (2007) Xiaoyan Zeng, "Energy and Discrepancy", (Illinois Institute of Technology) [PhD committee].
- (2007) Kwong Liu, "Digital nets", (Illinois Institute of Technology) [PhD committee].

8.4. **Masters supervision.**

- (Fall 2015-Summer 2017) Raphael Renya (Cal Poly, Pamona-joint with John Rock), Group actions and Geometry of Functions.
- (Fall 2009-Fall 2010) Dongyu Zang (GSU), Coding theory and linear block code, (PhD, Johns Hopkins). Now Senior Design Engineer at Quantum Surgical Chattanooga, USA.
- (Fall 2008-Fall 2009) Michael Mitchley (University of the Witwatersrand-joint with M. Sears), Diffusion processes. Now faculty, University of the Witwatersrand, South Africa.
- (Fall 2008-Fall 2009) Semih Erkan (GSU), Markov chains and decision making in competitive and random situations. Now finance specialist, Ankara, Turkey.
- (Fall 2006-Fall 2008) Rochelle Randall (GSU), Approximation and integration on compact subsets of Euclidean space, Now faculty, Savannah State University, USA.

- (Fall 2004-Fall 2006) Jeff Taylor (GSU-joint with Greg Michalski), Linear independent vectors and their applications. Now Dean, Ogeechee Tech, USA.

8.5. **Research with undergraduates at the University of Michigan: 2015-2017.**

- (2019-2022)-Gurpreet Kalsi, University of Michigan.
- (Fall 2017-Winter 2019)-Alec Greene, UROP 2017, University of Michigan.
- (October 2015-August 2017)-Brad Swartz, UROP 2016, University of Michigan. Now Data Analyst, Capital One, USA.
- (Spring 2018)-Brent Mode, REU 2017, Department of Physics, University of Michigan, Summer 2017-Present. Thesis Committee: University of Louisville.
- (Fall 2016-Present)-Daniel Kaiser, UROP 2017, University of Michigan, Number/Coding Theory.
- (Fall 2016-Winter 2019)-Safal Bora, UROP, University of Michigan, Number/Coding Theory.
- (Fall 2017)-Alex Downs, UROP Summer Fellowship, University of Michigan, University of Michigan UROP Changing gears.
- (Fall 2017)-Colby Kellin, University of Michigan, Mathematics Undergraduate Research.
- (2014-2015)-Yu Gu, Undergraduate Student, University of Michigan, Data Analysis. (PhD, Columbia University).
- (August 2015)-Dylan Airey, REU 2016, University of Texas, Graph theory. (PhD, Princeton).
- (Summer 2015)-Qingzhong Liang, REU 2015, Department of Mathematics, University of Michigan, Quantum computing and number theory. (PhD Georgia Tech.)
- (Summer 2016)-Neophytos Charalambides, REU 2016, Department of Mathematics, University of Michigan, Analysis. (PhD University of Michigan.)
- (Summer 2015)-Jeffrey Sun, REU 2015, Department of Mathematics, University of Michigan, Matroids and codes, Present: PhD student Princeton.
- (Summer 2015)-Jessica Thompson, REU 2015, University of Michigan, Quantum computing.
- (Fall 2015-Summer 2016)-Sean Kelly, Undergraduate research opportunity program, University of Michigan, Analysis.
- (Summer 2015)-Daniel Capodilupo, REU 2015, University of Michigan, Matroid Theory.
- (Summer 2015)-Samuel Freedman, REU 2015, University of Michigan, Matroid Theory.

8.6. **Research for Undergraduate Students (REU), Undergraduate Programs, University of Michigan: 2015-2017.**

- REU (2015) Department of Mathematics.
- REU (2016) Department of Mathematics.
- REU (2017) Department of Physics.

8.7. **Teaching innovations, High school outreach, diversity.**

- (2013-2014) University of Michigan Learning Community for Inclusive Teaching (LCIT).
- (2014-2017) Team member on Nevada State Grant: Nevada Mathematics Project (PI: Teruni Lamberg, University of Nevada): Collaborative Statewide mathematics initiative to improve K3-K12 mathematics instruction and student achievement. (www.nevadamathproject.com). (NSF STEM showcase: https://stemforall2019.videohall.com/presentations/1502). Teaching high school/middle school teachers common core. Nevada, USA.
- (2014-2017) Field of Dreams undergraduate minority students.
- (2012-2013) Wayne Country Day School, (K12 Advanced Placement and coordinator Chinese and South Korean student abroad program, minority students.
- (2013-Present) Research for undergraduates (REU's) at the University of Michigan.
- (2013-2015) Teaching minorities, students from low income families. High school students as part of the University of Michigan's Centre for Education Outreach Wolverine Express as part of the Ann Arbor Rising Scholars program minority program.

8.8. **Other teaching activities, University of Michigan.**

- Research Undergraduate Thesis External Committee, Brent Mode, University of Louisville.
- University Research Opportunity Program (UROP), 2015-Present.
- Michigan Research Community (MRC), 2016-Present; Talk, January 2017 "A look at my career as a researcher, teacher and mentor over twenty-five years and some good strategies for navigating college"
- University of Michigan Center for Education Outreach, Wolverine Express, 2013, 2014.
- University of Michigan Center for Education Outreach 2013, 2014.

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8.9. **List of research undergraduate students (non-University of Michigan) 2006-Present.**

- (Spring 2022-Present)-Semana de la matematica,University of Buenos Aires (joint with Pablo Groisman).
- (Fall 2015-Summer 2016)-Lesiba Maphakela (University of the Witwatersrand).
- (Summer 2010)-Luyanda Ndlov (University of the Witwatersrand).
- (Summer 2010)-Simphiwe Simelane (University of the Witwatersrand).
- (Summer 2010)-Adrian Joseph (University of the Witwatersrand-joint with M. Sears).
- (Fall 2010)- Cody Anderson (Georgia Southern).
- (Spring 2009)-Jon Martin (Georgia Southern).
- (Spring 2008)-Andy Haas (Georgia Southern).
- (Spring 2007)-Brandon Bevan.
- (Spring 2007) Tommy Rogers and William Triplett (Georgia Southern).
- (Spring 2006)-Tommy Rogers, William Triplett (Georgia Southern).

8.10. **Student joint talks graduate and undergraduate complete list with titles: 2000-2015, *=speaker.**

- Department of Mathematics, IUPUI, Spring 2017, "A problem of Quantum gates" (with A. Green*).
- Department of Physics, Summer 2016, "Quantum gates" (with Brent Mode*)
- Young Mathematicians Undergraduate Conference (Columbus, OH, August 2015), "On a problem of Sarnak for quantum gates" (with Q. Liang*).
- Fq12 (June 2015, "The cardinality of sets of $k$-independent vectors over finite fields and their connections to matroids" (with Daniel Capodilupo*).
- Fq12 (June 2015), "Lower bounds for maximal sets such that basis size subsets are bases over finite fields" (with Michael Hua*).
- Pomona, California (June 2015), "Littlewood polynomials" (with Raphael Reyna*).
- Whispers 2010, Iceland, "Random matrix theory to determine the number of endmembers in a hyperspectral image", (with K. Cawse*, M. Sears, A. Robin, S. Damelin, K. Wessels, F. van den Bergh, R. Mathieu).
- IGARSS, Cape Town, "Hyperspectral mineral data using wavelet analysis I" (with M. Mitchley*, M. Sears), July 2009.
- IGARSS, Cape Town, "The dimensionality of hyperspectral data using diffusion maps" (with L. du Plessis* and M. Sears), July 2009.
- 13th International Conference in Approximation Theory, "Information geometric curves" (With S. Jin Hwang* and A. Hero), March 2010.
- Mathematics Undergraduate seminar, GSU, "Approximation on Manifolds" (with Cody Anderson*), April 2009.
- Mathematics Undergraduate seminar, GSU, "Approximation on Tori" (with John Martin*), April 2009.
- Mathematics Undergraduate seminar, GSU, "Medical imaging." (With Andrew Haase*), April 2008.
- CMMSE, Computational Mathematical Methods in Science and Engineering, Illinois Institute of Technology, "Applications of the Fourier Transform in Imaging Highpass and Lowpass Filters" (with B. Beevan*), June 22-24, 2007.
- CMMSE, Computational Mathematical Methods in Science and Engineering, Illinois Institute of Technology, "Hyperinterpolation on spheres" (with R. Randal*), June 22-24, 2007.
- MAA SE 2007, "The Fourier Transform in Imaging", (with Brandon Beevan*), March 15-17, 2007.
- CMMSE, Computational Mathematical Methods in Science and Engineering, Illinois Institute of Technology, "X-band radar data for six points of a rotating octahedron" (with T. Brooks*, W.Tripplet*, B. Beevan* and M. Ferrara*), June 22-24, 2007.

8.11. **Courses taught and courses developed: University of the Witwatersrand, University of South Florida, Penn State University, Georgia Southern University, Washtenaw Community College, Varsity Tutors, 2008-Present.**

- Mathematics of Signal Processing (Advanced Topics, Math 5090).
- Computer Vision-Imaging and Wavelets (Advanced Topics, Math 5090).

- Real Analysis (Math 5331G).
- Approximation Theory/Advanced Approximation Theory. (Advanced Topics, Math 5090).
- Advanced Linear Algebra (Advanced Topics, Math 5090).
- Selected Topics in Mathematics-Methods of Mathematical Physics (Math 5090/5090G).
- Advanced Real Analysis (Math 7331).
- Discrete Mathematics-Graphs-Networks (Advanced Topics, Math 5090).
- Machine Learning-Data science/Neural Nets (Advanced Topics, Math 5090).
- Probability-Networks-Random Processes (Advanced Topics, Math 5090).
- Advanced Complex Analysis (Advanced Topics, Math 5090).
- Codes/designs/combinatorics (Advanced Topics, Math 5090).

8.12. **Additional courses taught (with and without technology).**

- AP Calculus, Calculus 1, 2, 3, Calculus 1, 2, 3 (Hon), College Algebra.
- Differential equations/Advanced Differential equations.
- Advanced Math Methods.
- Complex Analysis.
- Mathematical Structures.
- Senior Research Project and Thesis.
- Undergraduate Seminar.
- Numerical Analysis/Advanced Numerical Analysis.
- Linear Algebra.
- Advanced Linear Algebra.
- Statistics 1-2.
- Probability.

## 9. Service

9.1. **Editorial.**

- Editor, zbMATH Open, Department of Mathematics,
- Leading Editor of multiple authors chapters in journals for example 2021: Algorithms, "Machine learning and computer vision".
- Associate Editor, Mathematical Reviews (2013-March 2019).
- Reviewer Mathematical Reviews (1996-2013).
- SIAM Book reviewer (2015-Present).
- Referee for various journals: (1994-Present). See below.

9.2. **Service to American Mathematical Society (AMS).**

- AMS Research Communities Advisory Board: 01 February 2011 - 31 January 2014 (appointed by George Andrews, Evan Pue Professor of Mathematics, Penn State and former President of American Mathematical Society.).
- AMS, Committee of Committees 2009-2010 (appointed by George Andrews).
- Reviewer for Mathematical Reviews, The American Mathematical Society: 1996-2013.

9.3. **Selection of some committees.**

- GSU Senate member and Chair Provost task force for structuring of GSU sabbatical program (2004-2007, 2005-2006).

- Committee member (or Committee chair) of various search, endowed chair search, curriculum development, tenure and promotion, undergraduate placement, colloquium and math undergraduate award committees at GSU. (2000-2012).
- See below.

9.4. **Invited grant panel reviews.**

- NSF (DMS) May 2015.
- Fields Institute-Toronto, April 2011.
- NSF panel reviewer: January 2010, East Asia and Pacific Summer Institute student transfer program.
- NRF Bursary Review, August 2008.
- NSF panel reviewer, January 2006, National Science Foundation's Computer Science, Engineering, and Mathematics Scholarships (CSEMS) program.
- NRF Grant Review: June 2005.
- National Science Foundation: Course, Curriculum Laboratory Improvement (CCLI) program, Educational materials development (EMD) and National Dissemination (ND) tracks. (2005).
- NSF panel reviewer: January 2005, East Asia and Pacific Summer Institute student transfer program.
- NSF panel reviewer, March 2004, National Science Foundation's Computer Science, Engineering, and Mathematics Scholarships (CSEMS) program.
- NSF panel reviewer: July 2003.

9.5. **Selected list of selected journals referee.** SIAM Journal of Data Science, Journal of Royal Society Interface, Acta Mathematica; Annals of Mathematics; Communications in Pure and Applied Mathematics; Annals of Mathematics, American Math Monthly, Journal of American Mathematical Society, Geometric Analysis, Journal of Functional Analysis, Proceedings of the AMS, Discrete and Computational Geometry, The Australian Mathematical Education Journal (AMEJ), Constructive Approximation; SIAM J. Math Analysis; SIAM J. Numerical Analysis; SIGMA; Journal of Approximation Theory; BIT-Numerical Mathematics; Journal of Machine Learning Research; East Journal of Approximation; Journal of Computational Applied Mathematics; Discrete Mathematics; Annales Societatis Mathematicae; Duke Mathematical Journal; Commun. Math. Physics; Notices of the American Mathematical Society; Bulletin of the American Mathematical Society; Applied and Computational Harmonic Analysis, Geometric Analysis; Pacific Journal of Mathematics; Transactions of the American Mathematical Society; Annals of Statistics; IEEE Transactions of Signal processing; IEEE Transactions of Geosciences and Remote Sensing; Journal of Complexity; Scientific African, Applied and Computational Analysis; Electronic Journal of Numerical Analysis; Acta Math Hungarica; Journal of Numerical Algorithms; Monatashefte Mathematic; Houston Journal of Mathematics; Analysis and Applications; Linear algebra and Applications; Journal of Differential Equations; Proceedings of AMS; Journal of Number Theory; Inverse Problems; Journal of London Mathematical Society; Applied and Computational Harmonic Analysis; Mathematics of Computation; Journal of Mathematical Analysis and Applications; Journal of Computational Physics; Inverse

Problems; Journal of Nonlinear Analysis, Journal of Complex Analysis and Operator Theory; Journal of PG Engineering IEEE Transactions on Image Processing, IEEE Transactions of Information Theory, Advances in Numerical Analysis, Applicable Analysis and Discrete Mathematics, IEEE Transactions on Neural Networks and Learning Systems, Journal of Applied Mathematics and Physics, Communications in Nonlinear science.

### 9.6. **University/school service.**

#### 9.6.1. *GSU: University.*

- Spring 2005-Spring 2006: Member of GSU Provost Task Force- Sabbatical committee (with Associate Provost: A. Heaston and Dean, F. Whitt).
- Fall 2004-Fall 2007: Member of the University Senate.
- Summer 2008-December 2008: Co-advisor to GSA, GSU student multicultural center (with Kimberley Rowan).
- Summer 2008-December 2008: Co-advisor to Hillel, GSU student multicultural center (with Paula Solomon and Cathy Skidmore Hess).

#### 9.6.2. *GSU: Department.* **Committees chaired.**

- Fall 2003-Spring 2003: Chair of Undergraduate Placement.
- Spring 2003: Chair of Department Math Award Committee.
- Fall 2001-Spring 2003: Chair of Department Seminars and Colloquia.

**GSU: Other department service.**

- Fall 2010-Present: Member of Department Computational Science Seminar.
- Spring 2008: Department of Mathematical Sciences Hiring Task force.
- Fall 2004, Spring 2005: Department of Mathematical Sciences Tenure and Promotion Committee.
- Fall 2003-Spring 2004: Department of Mathematical Sciences Mentor.
- Fall 2003: Department of Mathematical Sciences Graduate Task force.
- Fall 2001-Spring 2002, Fall 2003-Spring 2004: Department of Mathematical Sciences Graduate Committee.
- Fall 2001-Spring 2002: Department of Mathematical Sciences Chair Search.
- Fall 2001: Math Sci Net committee for Department of Mathematical Sciences.
- Fall 2000-Spring 2012: University Graduate Faculty.
- Fall 2000: Coordinator: Department of Mathematical Sciences Analysis Seminar.
- Fall 2000-Spring 2001: Georgia Southern Karl Peace Endowed Chair Search committee.
- Fall 2000-Spring 2001: Department of Mathematical Sciences Undergraduate Committee.

## 10. Erdős number and connections to the Hungarian Academia of Sciences.

- My Erdős Number is 3 through 11 people.
- Paul Nevai, one of my external PhD advisors and from the Hungary Academia of Sciences, was a student of: Geza Freud, Béla Szökefalvi-Nagy and Paul Turan of the Hungarian Academy of Sciences.

- David Benko a student of Vilmos Totik of the Hungarian Academy of Sciences, is a coauthor of mine.
- My PhD thesis was on weighted polynomial approximation for Erdős weights. Paul Erdős has studied Erdős weights in connection with contracted zero distribution of orthogonal polynomials of Chebyshev type.
- My PhD advisor Doron Lubinsky has papers in approximation theory and orthogonal polynomials with Nevai, Totik and other mathematicians from the Hungarian Academy of Sciences.