GEORGE ANDROULAKIS
CURRICULUM VITAE

ACADEMIC CAREER

Professor	University of South Carolina	2021-present
Visitor	Georgia Tech	2008-2009
	Visiting: Prof. Jean Bellissard	
Associate Professor	University of South Carolina	2006-2020
Assistant Professor	University of South Carolina	2000-2005
Visiting Assistant Professor	Texas A & M University	1998-2000
Postdoctoral Fellow	University of Missouri at Columbia	1996-1998

EDUCATION

Ph.D. in Mathematics	University of Texas, Austin	1990-1996
Thesis Advisor: H.P. Rosenthal		
B.S. in Mathematics	University of Crete, Greece	1985-1989

MEMBERSHIP

Association of Quantum Probability and Infinite Dimensional Analysis	2023-present
International Association of Mathematical Physics	2024-present

---

RESEARCH

EDITORIAL WORK

Editor for the Annals of Functional Analysis	2010-2023.
Associate Editor for Quanta	2021-present

PUBLICATIONS
In Preparation

[41] G. Androulakis, M. Ziemke, *Functional analysis with step-by-step exercises*, a textbook for a two-semester graduate course in functional analysis.

Appeared

[40] G. Androulakis, W. Rabins, *Optimal lower bound for lossless quantum block encoding.* Quantum Information and Computation, Vol. **24**, No. 13 & 14 (2024) 1110-1145.

[39] G. Androulakis, W. Rabins, *Optimal lower bound of the average indeterminate length lossless quantum block encoding.* 2024 IEEE International Symposium on Information Theory (ISIT), Athens, Greece, 2024, pp. 2694-2699, doi: 10.1109/ISIT57864.2024.10619558.

[38] G. Androulakis, T.C. John, *Relative Entropy via Distribution of Observables.* Infin. Dimens. Anal. Quantum Probab. Relat. Top. **27**, No. 02, 2350021 (2024)

[37] G. Androulakis, T.C. John, *Petz-Rényi Relative Entropy of Thermal States and their Displacements.* Letters in Mathematical Physics, (2024) 114:57, https://doi.org/10.1007/s11005-024-01805-z.

[36] G. Androulakis, T.C. John, *Quantum f-divergences via Nussbaum-Szkoła Distributions and Applications to f-divergence Inequalities*, Reviews in Mathematical Physics, doi: 10.1142/S0129055X23600024.

[35] G. Androulakis, R. McGaha, *A Variational Quantum Algorithm For Approximating Convex Roofs*, *Quantum Information and Computation*, Vol. **22**, No. 13&14 (2022) 1081–1109.

[34] G. Androulakis, R. McGaha, *Some remarks on the entanglement number*, *Quanta* 2020; **9**: 22-36.

[33] G. Androulakis, A. Wiedemann, M. Ziemke, *The induced semigroup of Schwarz maps to the space of Hilbert-Schmidt operators*, *Mathematical Physics, Analysis and Geometry*, **23**, 10 (2020).

[32] G. Androulakis, D. Wright, *Optimality in Quantum Data Compression using Dynamical Entropy*. Phys. Rev. A **100**, (2019) 032301.

[31] G. Androulakis, A. Wiedemann, *GKSL generators and digraphs: Computing invariant states* J. Phys. A: Math. Theor. **52** (2019) 305201.

[30] G. Androulakis, D. Wright, *On the non-linearity of quantum dynamical entropy*, J. Math. Phys. **60**, (2019), 053504.

[29] G. Androulakis, R. Musulin, *A connection between mixing and Kac's chaos*, Dynamical Systems, An International Journal, **34**, no. 1, (2019), 113-129.

[28] G. Androulakis, R. Musulin, *Quantum Kac's chaos*, Commun. Math. Sci., **16**, No. 7, (2018), 1801-1825.

[27] G. Androulakis, M. Ziemke, *On the closedness of the generator of a semigroup*, Semigroup Forum **93**, no. 3, (2016), 589-606.

[26] G. Androulakis, M. Ziemke, *Generators of Quantum Markov semigroups*, J. Math. Phys. **56**, (2015), 083512.

[25] G. Androulakis, J. Bellissard C. Sadel, *Dissipative dynamics in semiconductors at low temperature*. J. Stat. Phys., **147**, Issue 2, (2012), 448-486.

[24] G. Androulakis, A. Flattot, *Hyperinvariant subspace for weighted composition operator on $L^p([0, 1]^d)$*, J. Operator Theory **66** No. 1, (2011), 125-144.

[23] G. Androulakis, N.J. Kalton, A. Tcaciuc *On Banach spaces containing ℓ_p or c_0*, Houston J. Math. **37**, (3) (2011) 859-866.

[22] G. Androulakis, S.J. Dilworth, N.J Kalton, *A new approach to the Ramsey-type games and the Gowers dichotomy in F-spaces*, Combinatorica **30**, (4), (2010), 359-385.

[21] G. Androulakis, A.I. Popov, A. Tcaciuc, V.G. Troitsky, *Almost invariant half-spaces of operators on Banach spaces*, Integral Equations and Operator Theory **65** (2009), 473-484.

[20] G. Androulakis, P. Dodos, G. Sirotkin, V.G. Troitsky, *Classes of strictly singular operators and their products*, Israel J. Math., **169**, (2009), 221-250.

[19] G. Androulakis, F. Sanacory, *An extension of Schreier unconditionality*, Positivity, **12**, (2008), no. 2, 313–340.

[18] G. Androulakis, K. Beanland, *Descriptive set theoretic methods applied to strictly singular and strictly cosingular operators*, Quaestiones Mathematicae, **31** (2008), 151-161.

[17] G. Androulakis, F. Sanacory, *Some equivalent norms on the Hilbert space*, Banach spaces and their applications in analysis, Walter de Gruyter, Berlin, (2007), 241–250.

[16] G. Androulakis, *A new method for constructing invariant subspaces*, J. Math. Anal. Appl., **333** (2007) 1254–1263.

[15] G. Androulakis, K. Beanland, *A Hereditarily Indecomposable Asymptotic ℓ_2 Banach Space*, Glasgow Mathematical Journal, **48**, (2006) 503-532.

[14] G. Androulakis, K. Beanland, S.J. Dilworth, F. Sanacory, *Embedding ℓ_∞ in the space of bounded operators on certain Banach spaces*, Bull. London Math. Soc., **38**, (2006), 979-990.

[13] G. Androulakis, E. Odell , Th. Schlumprecht and N. Tomczak-Jaegermann, *On the structure of the spreading models of a Banach space*, Canadian J. Math., **57**, (4), (2005), 673–707.

[12] G. Androulakis and S. Dostoglou, *Space averages and homogeneous fluid flows*, Mathematical Physics Electronic Journal, Vol. **10**, no 4 (2004), 1–12.

[11] G. Androulakis and P. Enflo, *A property of strictly singular 1-1 operators*, Ark. Mat. **41** (2003), 233–252.

[10] G. Androulakis, *A note on the method of minimal vectors*, Trends in Banach spaces and operator theory (Memphis, TN, 2001), Contemp. Math., (Amer. Math. Soc., Providence, RI), **321**, (2003), 29–36.

[9] G. Androulakis and Th. Schlumprecht, *The Banach space S is complementably minimal and subsequentially prime*, Studia Math., **156** (3), (2003), 227–242.

[8] G. Androulakis and Th. Schlumprecht, *Strictly singular, non-compact operators exist on the Gowers-Maurey space*, J. London Math. Soc. (2), **64**, no 3, (2001), 655–674.

[7] G. Androulakis, P. Casazza and D. Kutzarova, *Some more ℓ_2-saturated weak Hilbert spaces*, Canad. Math. Bull., **43**, no. 3, (2000), 257–267.

[6] G. Androulakis and S. Dostoglou, *Positivity results for the Yang-Mills-Higgs Hessian*, Pacific J. Math, **194**, no. 1, (2000), 1–17.

[5] G. Androulakis and E. Odell, *Distorting mixed Tsirelson spaces*, Israel J. Math. **109** (1999), 125–149.

[4] G. Androulakis and S. Dostoglou, *On the stability of monopole solutions*, Nonlinearity **11** No 3 (1998), 377–408.

[3] G. Androulakis, C. D. Cazacu and N. J. Kalton, *Twisted sums, Fenchel-Orlicz spaces and property (M)*, Houston J. Math. **24** No 1 (1998), 105–126.

[2] G. Androulakis, *A counterexample to a question of R. Haydon, E. Odell and H. Rosenthal*, Proc. Amer. Math. Soc., **126** No 5 (1998), 1425–1428.

[1] G. Androulakis, *A subsequence characterization of sequences spanning isomorphically polyhedral Banach spaces*, Studia Math. **127**, No 1, (1998), 65–80.

[0] G. Androulakis, *Isomorphically polyhedral Banach spaces and mixed Tsirelson spaces of arbitrary distortion*, Ph.D. dissertation, University of Texas, Austin, TX, 1996.

Ph.D. STUDENT SUPERVISION

- Chase Flemming. Current PhD student. August 2024-present.

- Theodoros Anastasiadis. Current PhD student. Summer 2022-present.

- Ryan McGaha. Ph.D. in 5/22. Title: *The existence and quantum approximation of of optimal pure state ensembles.* Current position: Principal Software Engineer, Northrop Grumman.

- Duncan Wright. Ph.D. in 5/19. Title: *Dynamical entropy of quantum random walks.* Current position: AMS Congressional Fellow.

- Alexander Wiedemann. Ph.D. in 5/19. Title: *On the generators of quantum dynamical semigroups.*Current position: Assistant Professor, Hamline University.

- Rade Musulin; Ph.D. in 05/18. Title: *Classical and Quantum Kac's chaos.* Current position: Lecturer, Rowan University.

- Matthew Ziemke; Ph.D. in 05/15. Title: *Pettis integration with applications to generators of Quantum Markov Semigroups.* Current position: Assistant Teaching Professor, Drexel University.

- Frank Sanacory; Ph.D. in 06/07. Title: *The richness of the space of operators on a Banach space.* Current position: Associate Professor in College of Old Westbury SUNY.

- Kevin Beanland; Ph.D. in 08/06. Title: *A Hereditarily Indecomposable Banach space and Embeddings of ℓ_∞ into spaces of operators.* Current position: Professor in Washington and Lee University.

POSTDOCTORAL FELLOW SUPERVISION

- Dr. Tiju Cherian John, (Fulbright Fellow), 2/23/2021-12/31/2022.
- Dr. Antoine Flattot, AY 2006-2010.
- Dr. Bünyamin Sari; AY 2004-2005 (co-advised by Prof. S.J. Dilworth).

RESEARCH GRANTS AND OTHER AWARDS

CAS, Dean's initiative for travel	$ 883	For participating in APS March 2024
CAS, Dean's initiative for travel	$ 850	For participating in QIP2022
Fulbright Foundation		2021-2023
coPI in the application of Dr. Tiju Cherian John.		
CAS, Dean's initiative for travel	$ 1,500	For participating in QIP2020
CAS, Dean's initiative for research	$ 5,000	01/2019-12/2019
No cost extension of the grant below		07/2002-07/2003
National Science Foundation (DMS-9970547)	$ 56,709	06/1999-07/2002
PI, *"Isomorphic Theory of Banach Spaces"*		
National Science Foundation (DMS-9623260)	$ 7,000	07/1998-08/1998
NSF Young Investigator		

INVITED/SUPPORTED PARTICIPATION IN WORKSHOPS

BIRS Workshop on Quantum Markov Semigroups and Channels. Special Classes and Applications.
  Oaxaca, Mexico, August 18-23, 2024.
  Invited talk: "The generalized quantum Stein's Lemma".

7th Math @ NTUA, Summer school in Mathematical Analysis,
  National Technical University of Athens, June 27-July 3, 2024.
  In honor of Professor Spiros Argyros, Website of the summer school
  Invited talk "Connections between classical and quantum information theory".

QPIDA2023 Quantum Probability and Infinite dimensional Analysis
  Ohio State University, June 1-2, 2023
  Invited participant.

QPIDA40 Quantum Probability and Infinite dimensional Analysis
  Ohio State University, August 11-16, 2019
  Invited participant.

BIRS Workshop on Quantum Transport Equations and Applications
  Oaxaca Mexico, September 2-9, 2018
  Co-organizer.

QMath 13 Mathematical Results in Quantum Physics
Georgia Tech, October 8-11, 2016
Invited participant.

BIRS Workshop on Quantum Markov Semigroups and Quantum Probability
Oaxaca, Mexico, August 23-28, 2015.
Invited participant.

NSF Workshops in Linear Analysis and Probability
Texas A&M University; College Station, TX
Invited participant
Summers: 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002, 2004, 2005, 2008, 2013.

Program on Convex geometry and Geometric Functional Analysis
Mathematical Sciences Research Institute; Berkeley, CA
Invited Participant and member of the MSRI
January 1996

PARTICIPATION IN OTHER MEETINGS

Quantum Information Processing (QIP 2025)
Raleigh Convention Center, Raleigh, NC.   February 24-28, 2025

Beyond IID in Information Theory 12
University of Illinois at Urbana-Champaign.   July 29-August 2, 2024

International Symposium in Information Theory (ISIT) 2024
Accepted talk "Optimal lower bound of the average indeterminate length lossless quantum block encoding"
July 2024

APS March Meeting 2024
Contributed a talk "Optimal lower bound of the average indeterminate length lossless block encoding"
March 2024

APS March Meeting 2023
Contributed a talk "Quantum f-divergences via Nussbaum-Szkola distributions with applications to Gaussian states"
March 2023

QIP 2022 Quantum Information Processing (poster presentation)
Caltech
March 2022

Virtual APS March Meeting 2020
Contributed a virtual talk "Optimal quantum data compression using dynamical entropy"
March 2020

The Quantum Wave in Computing Boot Camp
  Simons Institute of Computing, UC-Berkeley
  January 2020

QIP 2020 Quantum Information Processing (poster presentation)
  Southern Univ. of Sci. and Techn., Institute of Quantum Sci. and Eng., Peng Cheng Lab.
  January 2020

QSC 2019 Quantum Simulation & Computation
  ICMAT; Ignacio Cirac Lab, Madrid, Spain
  October 2019

INVITED SEMINAR ADDRESSES

7. Differential Equations Seminar, University of Missouri-Columbia   10/2023
   The Nussbaum-Szkola distributions and their use.
6. Analysis seminar, University of Crete   6/2019
   The role of entropy in quantum communications
5. General seminar, Technical University of Crete   6/2019
   The role of entropy in quantum communications
4. General seminar, National and Kapodistrian Univerity of Athens   5/2019
   The role of entropy in quantum communications
3. Computational and Applied Mathematics seminar, University of South Carolina   3/2019
   From quantum random walks to quantum data compression
2. Computational and Applied Mathematics Seminar, University of South Carolina   2/2019
   From quantum random walks to quantum computations
1. Differential Equations Seminar, University of Missouri-Columbia   3/2014
   Generators of Quantum Markov semigroups

CONTRIBUTED SEMINAR ADDRESSES (USC SEMINARS)

January-March and September-October 2023 (6 talks), October and November 2022 (3 talks), April 2021 (1 talk), November 2018 (1 talk), October 2017 (1 talk), October-November 2014 (6 talks), February 2013 (2 talks), January-February-November 2011 (4 talks), November 2010 (1 talk), September 2009 (3 talks), February-April 2008 (3 talks), April-October 2006 (3 talks), August-September 2005 (2 talks), January 2004 (1 talk), January-December 2003 (2 talks), January-February 2002 (2 talks).

INVITED COLLOQUIUM ADDRESSES

15. Department of Physics and Astronomy, University of South Carolina   2/2023
    An excursion into quantum information with highlights from some of my latest research
14. University of Crete   7/2014
    Generators of Quantum Markov semigroups
13. Georgia State University   2/2011
    Dissipative dynamics in semiconductors at low temperature
12. University of Tennessee at Chattanooga   6/2009
    The invariant subspace problem
11. University of Alberta, (seminar)   3/2008
    A simple proof of a theorem of Gowers

10. University of Crete   6/2007
An new proof of Gowers' dichotomy

9. University of North Texas   10/2006
Games in Banach spaces

8. University of Mississippi   04/2004
Some Ramsey type results in Banach spaces

7. East Carolina University   10/2000
Spreading models in Banach spaces

6. University of South Carolina   03/2000
Towards a positive solution of the invariant subspace problem in Banach spaces

5. Kent State University   03/2000
Existence of strictly singular non-compact operators in Hereditarily Indecomposable Banach spaces

4. Miami University of Ohio   02/2000
On the stability of Yang-Mills-Higgs Hessian

3. Bowling Green State University   02/2000
On a question of Gowers and Maurey

2. University of Texas; San Antonio   10/1999
New classes of weak Hilbert spaces

1. Miami University of Ohio   09/1997
Distortion of Banach spaces

INVITED CONFERENCE ADDRESSES

36. BIRS 24w5240, Quantum Markov Semigroups and Channels,   8/2024
Oaxaca, Mexico,
On the generalized Quantum Stein's Lemma

35. *QPIDA2023, Quantum Probability and Infinite dimensional Analysis 2023,*   *06/2023*
Ohio State University
Quantum f-divergences via Nussbaum-Szkoła Distributions with applications to f-divergence inequalities

34. *QPIDA41, Quantum Probability and Infinite dimensional Analysis, 41,*   *03/2021*
on-line conference
Entanglement measures

33. *QPIDA40, Quantum Probability and Infinite dimensional Analysis, 40,*   *08/2019*
Ohio State University
The role of entropy in classical and quantum communications

32. *BIRS, Quantum Transport Equations and Applications,*   *09/2018*
Oaxaca, Mexico
The induced semigroup on the space of Hilbert-Schmidt operators

31. *BIRS, Quantum Transport Equations and Applications,*   *09/2018*
Oaxaca, Mexico
Quantum Kac's chaos

30. *Virginia Operator Theory and Complex Analysis Meeting (VOTCAM)*   *10/2017*
    University of Virginia
    Some forms of chaos in quantum mechanics
29. *BIRS, Quantum Markov semigroups and Quantum Probability*   *08/2015*
    Oaxaca, Mexico
    Generators of Quantum Markov Semigroups
28. *AMS Regional Meeting: Special session on Banach spaces and applications*   *11/2010*
    University of Richmond
    Dissipation of electrons in lightly doped semiconductors
27. *International Conference on Interdisciplinary Mathematical and Statistical Techniques* *5/2007*
    Memphis, TN
    A new approach to Ramsey-type results in F-spaces
26. *AMS Regional Meeting: Special Session on Vector Measures*   *03/2007*
    Miami, OH
    Some of my favorite problems and related results on spaces of operators
25. *Conference in honor of N.J. Kalton's 60th birthday*   *05/2006*
    Miami University at Ohio
    The invariant subspace problems in Banach spaces
24. *AMS Regional Meeting: Special Session on Banach spaces and applications*   *04/2006*
    Florida International University
    Some operator ideals and their products
23. *Workshop in Linear Analysis and Probability*   *08/2005*
    Texas A & M University
    A new method for constructing invariant subspaces
22. *Workshop in Linear Analysis and Probability*   *08/2005*
    Texas A & M University
    Gowers' trichotomy in F-spaces
21. *AMS Regional Meeting: Special Session on spaces of vector valued functions*   *01/2005*
    Atlanta, GA
    Some remarks about the Invariant subspace problem
20. *Workshop in Linear Analysis and Probability*   *08/2004*
    Texas A & M University
    Embedding ℓ_∞ in the space of all operators
19. *AMS Regional Meeting: Special Session on Recent trends in Banach spaces*   *03/2004*
    Athens, OH
    Banach spaces which admit homogeneous measures
18. *Workshop on Banach spaces and Ramsey Theory*   *02/2003*
    Fields Institute, Toronto, Canada
    Constructing hyper-invariant subspaces of certain operators in Banach spaces
17. *Workshop in Geometric Functional Analysis*   *08/2002*
    University of British Columbia, Vancouver, Canada
    A new sufficient condition for the existence of invariant subspaces
16. *AMS Regional Meeting: Special Session on Banach spaces and applications*   *03/2002*
    Georgia Institute of Technology
    A property of strictly singular 1-1 operators

15. *Conference on "Trends on Banach spaces and Operator Theory"*   *10/2001*
    University of Memphis
    A note on the method of minimal vectors
14. *Workshop in Linear Analysis and Probability*   *08/2000*
    Texas A & M University
    Strictly singular non compact operators
13. *AMS Regional Meeting: Special Session on Banach and Operator Spaces*   *08/1999*
    University of Texas, Austin
    Subsymmetric sequences in Schlumprecht space
12. *Workshop in Linear Analysis and Probability*   *08/1999*
    Texas A & M University
    Candidates for prime Banach spaces
11. *Workshop in Geometric Functional Analysis*   *07/1999*
    University of British Columbia, Vancouver, Canada
    The Banach space S is subsequentially prime
10. *Workshop in Linear Analysis and Probability*   *08/1998*
    Texas A & M University
    New ℓ_2 saturated weak-Hilbert spaces
9. *AMS Regional Meeting: Special Session on Banach spaces*   *03/1998*
    University of Louisville
    Twisted sums of Orlicz spaces
8. *AMS Regional Meeting: Special Session on Banach spaces and Wavelets*   *10/1997*
    Georgia Institute of Technology
    Spectral analysis of Yang-Mills-Higgs functionals
7. *Workshop in Linear Analysis and Probability*   *08/1997*
    Texas A & M University
    On the spectrum of Quadratic forms
6. *Wabash Extramural Modern Analysis Mini-conference*   *10/1996*
    Indiana University- Purdue University at Indianapolis
    A subsequence characterization of sequences spanning isomorphically polyhedral Banach
    spaces
5. *Workshop in Linear Analysis and Probability*   *08/1996*
    Texas A & M University
    Isomorphically polyhedral Banach spaces
4. *AMS Regional Meeting: Special Session on Banach spaces and related topics*   *06/1996*
    University of Missouri, Columbia
    Distorting mixed Tsirelson spaces
3. *Concentration on Infinite-dimensional Convex Geometry*   *02/1996*
    Mathematical Sciences Research Institute, Berkeley
    The ℓ_1 index as an invariance for distortion
2. *Workshop in Linear Analysis and Probability*   *07/1995*
    Texas A & M University
    Estimates of the ℓ_1 index for some mixed Tsirelson spaces

1. *AMS Annual Meeting: Special Session in Banach space Theory* 01/1993
   University of Texas, San Antonio
   On a question of R. Haydon, E. Odell and H. Rosenthal

TEACHING

COURSES TAUGHT AT USC

Term	Course	Title	Enrollment	Class Avg	Overall instructor eval.
Fall 24	Math 241H	Vector Calculus	21		
	Math 756	Funct. Anal. I	14		
	Math 899	Dissertation	1		
Spring 24	Math 242	Elem. Diff. Eqns	44	76/100	4.08/5
	Math/Phys/Csce 764	Q. Inf.	11	4/4	5/5
	Math 899	Dissertation	1	T	-
Fall 23	Math 241	Vector Calculus	41+37	73.11/100	4.12/5
	Math 899	Dissertation	1	T	-
Summer 23	Math 899	Dissertation	1	T	-
Spring 23	Math 241	Vector Calculus	39	2.38/4	3.4/5
	Math 728	Information Th.	7	4	4/5
	Math 899	Dissertation	1	T	-
Fall 22	Math 241	Vector Calculus	40	2.91/4	3.79/5
	Math 520	Ordinary D.E.	14	2.6/4	3.57/5
	Math 899	Dissertation	1	T	-
Summer 22	Math 899	Dissertation	1	T	-
Spring 22	Math/Stat 511	Probability	27	2.51/4	4.12/5
	Math 757	Funct. Anal. II	13	4/4	4.5/5
	Math 899	Dissertation	1	T	-
Fall 21	Math 344	Applied Lin. Alg.	41	3.13/4	4.67/5
	Math 756	Funct. Anal. I	17	4/4	4.25/5
	Math 899	Dissertation	1	T	-
Spring 21	Math 555H	Analysis I	5	2.9/4	5/5
	758C	Quant. Complexity	13	4/4	5/5
Fall 20	Math 141	Calculus I	60	2.51/4	2.18/5
	Math 758Q	Quant. Info.	9	4/4	5/5
Spring 19	142, sec. 11,12	Calculus II	43	1.96/4	3.33/5
	Math 554-703I	Analysis I	18	2/4	3/5
	Math 899	Dissertation	2	T	-
Fall 18	142, sec.3,4	Calculus II	61	2.08/4	2.67/5
	142, sec.11,12	Calculus II	61	2.17/4	2.53/5
	Math 899	Dissertation	2	T	-
Spring 18	Math 142	Calculus II	32	1.84/4	3.68/5
	Math 704	Analysis II	14	2.8/4	3.58/5
	Math 899	Dissertation	3	T	-
Fall 17	Math 142	Calculus II	52	1.8/4	2.56/5
	Math 703	Analysis I	15	1.96/4	3.08/5
	Math 899	Dissertation	3	T	
Spring 17	Math 142	Calculus II	56	1.98/4	3.78/5

	Math552/752I	Complex Var.	16	2.18/4	4.21/5
	Math 899	Dissertation	3	T	-
	Math 890	Graduate Sem.	3	S	-
Fall 16	Math 142	Calculus II	59	2.43/4	4.15/5
	Math 544	Linear Algebra	33	3.25/4	3.56/5
	Math 899	Dissertation	3	T	-
Spring 16	Math 142	Calculus II	67	2.39/4	3.45/5
	Math,Stat 511	Probability	48	2.27/4	2.32/5
	Math 899	Dissertation	3	T	-
Fall 15	Math 142	Calculus II	60	2.17/4	3.04/5
	Math 241	Vector Calculus	44	2.04/4	3/5
Summer 15	Math 798	Dir. Read. Res.	2	4/4	
Spring 15	Math 142	Calculus II	61	2.2/4	3.86/5
	Math 757	Funct. An. II	7	3.58/4	4.4/5
	Math 798	Dir. Read. Res.	3	4/4	5/5
	Math 799	Masters Th.	1	4/4	
Fall 14	Math 141	Calculus I	59	2.46/4	3.97/5
	Math 756	Funct. An. I	9	3.44/4	4.57/5
	Math 899	Dissertation	1	T	-
Spring 14	Math 142	Calculus II	59	2.05/4	3.71/5
	Math 704	Analysis II	17	3.38/4	3.63/5
	Math 899	Dissertation	1	T	-
Fall 13	Math 142	Calculus II	62	1.82/4	3.71/5
	Math 703	Analysis I	20	2.75/4	3.63/5
	Math 899	Dissertation	1	T	-
	Math 890	Graduate Sem.	1	S	-
Spring 13	Math 141	Calculus I	54	1.74/4	3.52/5
	Math 554-703I	Analysis I	26	1.19/4	2.79/5
	Math 899	Dissertation	1	T	-
Fall 12	Math 122	Bus. Calc.	81	1.57/4	2.95/5
	Math 520	Ordinary D.E.	31	1.8/4	2.82/5
	Math 899	Dissertation	1	T	-
Spring 12	Math 241	Calclulus III	39	1.09/4	3.92/5
	Math 544	Linear Alg. Honors	16	3.09/4	2.17/5
	Math 798	Dir. Read. Res.	1	4	-
Fall 11	Math 141	Calculus I	31+31	2.3/4	3.78/5
	Math 242	Diff. Equations	46	1.82/4	3.71/5
	Math 798	Dir. Read. Res.	1	4/4	-
Spring 11	Math 141	Calculus I	26+27	1.05/4	3.824/5
	Math 550	Vector Analysis	22	2.17/4	4.2/5
Fall 10	Math 141	Calculus I	30+31	2.26/4	3.88/5
	Math 241	Vector Calculus	39	1.9/4	3.33/5
Spring 10	Math 141	Calculus I	28+29	1.44/4	3.64/5
	Math 554-703I	Analysis I	10	1.6/4	3.57/5
	Math 890	Graduate Sem.	1	S	-

Fall 09	Math 141	Calculus I	26+25	2.57/4	4.6/5
	Math 242	Diff. Equations	46	2.22/4	3.4/5
Spring 08	Math 141	Calculus I	28+25	1.85/4	3.8/5
	Math 242	Diff. Equations	37	1.85/4	4.4/5
Fall 07	Math 524	Nonlinear Optim.	16	1.97/4	3.2/5
	Math 141	Calculus I	30+30	2.23/4	3.5/5
Spring 07	Math197X	Research & Carreers	10	N/A	Not Obtained
	Math 757	Funct. An. II	5	4/4	4/4
Fall 06	Math 142	Calculus II	26+24	2.15/4	2.9/4
	Math. 756	Funct. An. I	8	4/4	3.3/4
	Math 890	Graduate Sem.	1	S	-
	Math 899	Dissertation	1	T	-
Spring 06	Math 241	Vector Calculus	45	2.44/4	2.87/4
	Math 550	Vector Analysis	15	2.29/4	3.15/4
	Math 899	Dissertation	2	T	-
Fall 05	Math 142	Calculus II	26+25	1.99/4	3.05/4
	Math 242	Diff. Equations	51	2.31/4	3.167/4
	Math 890	Graduate Sem.	1	S	-
	Math 899	Dissertation	2	T	-
Summ. II 05	Math 899	Dissertation	2	T	-
Spring 05	Math 704	Complex An.	16	3.16/4	2.81/4
	Math 890	Graduate Sem.	2	S	-
	Math 899	Dissertation	2	T	-
Fall 04	Math 141	Calculus I	26+24	1.94/4	2.36/4
	Math 554-703I	Analysis I	10	3.25	3.8/4
	Math 890	Graduate Sem.	2	S	-
	Math 899	Dissertation	2	T	-
Summer II 04	Math798	Dir. Read. Res.	1	4/4	-
Spring 04	Math 544H	Linear Alg.	13	3/4	2.7/4
	Math 757	Funct. An. II	5	4/4	3.8/4
Fall 03	Math 142H	Calculus II	25	2.48/4	3.3/4
	Math 756	Funct. An. I	6	4	4/4
Spring 03	Math 704	Complex An.	5	3.3/4	3.00/4
Fall 02	Math 141	Calculus I	31+35	2.52/4	3.53/4
	Math 703	Real Analysis	10	3.61/4	2.33/4
Spring 02	Math 142	Calculus II	31	2.48/4	3.63/4
	Math 554	Analysis I	11	1.86/4	3.50/4
Fall 01	Math 141	Calculus I	26+33	2.00/4	2.88/4
	Math 241	Calculus III	33	2.09/4	2.47/4
Spring 01	Math 142	Calculus II	25+35	2.46/4	3.33/4
	Math 550	Vector An.	14	2.00/4	2.85/4
Fall 00	Math 141	Calculus I	32+35	2.28/4	3.08/4

SERVICE

SERVICE TO USC

I have participated in the following departmental committees (listed alphabetically):

Assessment committee
  2011-2013, 2014-2015, 2016-2017.

Bylaws Committee
  2024-2025.,

Calculus Textbook Committee
  2003-2004, 2004-2005.

Chair of the Colloquium Committee
  2000-2001.

Chair of the Committee of tenured faculty
  4/15/07-4/15/08, 4/15/13-4/15/14, 4/15/25-4/15/26.

Comprehensive Exam Committee
  8/2004, 8/2007, 8/2015, 8/2016, 8/2020, 8/2022, 8/2023.

Events Committee
  2020-2021.

Faculty Advisory Council
  2001-2002, 2002-2003, 2004-2005, 2006-2007, 2012-2013, 2013-2014, 2023-2025.

Faculty Mentor
  2023-present (for Haonan Zhang).

Graduate Advisory Council
  Spring 2006-Spring 2008, Fall 2009-Spring 2019, Fall 2022-Spring 2024.

Hiring committee:
  2022-2023, 2023-2024 (for Tenure Track position in Data science, and Bridge to faculty position),
  2024-2025 (Diversity Advocate for Tenure Track position in probability).

Hiring Task-force committee for drafting a strategic hiring plan:
  2023, 2024.

Masters theses committee member (for students that I did not supervise)
  Joseph Patterson (2001), Geoffrey Dillon (2004).

Peer Review Teaching Committee
  2011-2013, 2018-2019, 2020-2022, 2022-Spring 2024 (Chair of F2 Committee).

Ph.D. theses committee member (for students that I did not supervise)
  Mathew Gamel (Math, 2011), James Sweeney (Math, 2018), Jaree Hudson (Math, 2018), Taeho
  Kim (Statistics USC, 2019), Chung Nguyen (Physics USC, 2024), Rabins Wosti (Computer
  Science and Engineering, USC, 2024), McKenzie Black (Math 2024).

Physical Facilities Committee
    2001-2002.

Post tenure review committee
    2006-2008, 2009-2011, 2015-2018, 2021-2023, 2024-2026.

Practice AP Calculus Test Committee
    2020-2022.

Qualifying exam committee:
    12/2002, 8/2003, 8/2005, 1/2006, 1/2007, 8/2009, 1/2010, 8/2011, 8/2014, 1/2015, 8/2015,
    8/2016, 1/2017, 8/2018, 1/2019, 8/2022, 1/2023, 8/2023, 1/2024.

Search committee for department chair
    Fall 2011.

Textbook Committee
    2004-2005.

Undergraduate Adviser
    2000-2001, 2001-2002, 2002-2003, 2003-2004, 2004-2005, 2005-2006, 2021-Spring 2024.

Undergraduate Advisory Council
    2002-2003, 2003-2004.

Other services to USC math department:

I visited and provided feedback on TA taught classes at the request of the Graduate Director during
    the years:
    2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2015, 2017, 2023.

I wrote recommendation letters for University of South Carolina students during the years:
    2001 (1 letter), 2004 (2 letters), 2005 (7 letters), 2006 (4 letters), 2007 (2 letter), 2008 (3 letter),
    2009 (3 letter), 2010 (3 letters), 2012 (2 letters), 2013 (2 letters), 2014 (1 letter), 2015 (1 letter),
    2017 (4 letters), 2018 (5 letters), 2019 (4 letters), 2020 (1 letter), 2021 (1 letter), 2022 (3 letters),
    2024 (4 letters).

Directed reading for undergraduates:
    In Summer 2010 I directed the reading of Gregory Marx through the materials of Math 555
    (Analysis II). Gregory had been accepted in our graduate program but he did not have the
    required background knowledge of this class.

I participated in the following committees of the College of Arts and Sciences (CAS):
    CAS Interdisciplanary Working Group (Spring 2019).

I participated in the following University committees:
Faculty Senate:
    2003-2006, 2010-2013.

SERVICE TO MATHEMATICAL COMMUNITY

Editor

Annals of Functional Analysis	2010-present.
Associate Editor for Quanta	2021-present

Referee for grant proposals

6. Canada Research Chairs nominee evaluation — 2016
5. Discovery Grant, Natural Sciences and Engineering Research Council of Canada — 2013
4. National Science Foundation proposal review — 2007
3. Discovery Grant for NSERC (National Sciences and Engineering Research Council of Canada) 2007
2. Research and productivity Scholarship awards, USC — 2003
1. National Research Council — 2001

Referee for professional journals and publishers

49. Quanta — 2024
48. Quantum Studies: Mathematics and Foundations — 2024
47. Concrete Operators — 2022
46. Mathematical Analysis and its Applications
45. Quantum Studies: Mathematics and Foundations — 2020
44. Journal of Stochastic Analysis
43. Quantum Studies: Mathematics and Foundations — 2019
42. Annals of Functional Analysis — 2015
41. Mathematicae Debrecen — 2013
40. Proceedings of AMS
39. Journal of Functional Analysis
38. Glasgow Mathematical Journal
37. Rocky Mountain Journal of Mathematics — 2011
36. Questiones Mathematicae — 2010
35. Mathematical Communications
34. Journal of Mathematical Analysis and Applications
33. Journal of Functional Analysis
32. International Journal of Mathematics and Mathematical Sciences
31. Matematicki Vesnik
30. Rocky Mountain Journal of Mathematics — 2009
29. Collectanea Math. — 2008
28. Studia Mathematica
27. Journal of Mathematical Analysis and Applications
26. Abstract and Applied Analysis
25. Proceedings of the American Mathematical Society
24. Houston Journal of Mathematics
23. Proceeedings of the American Mathematical Society
22. Journal of Functional Analysis — 2007
21. Proceedings of the American Mathematical Society
20. Conference Proceedings in honor of N.J. Kalton
19. Canadian Journal of Mathematics — 2006
18. Archiv der Mathematik
17. International Journal of Mathematics and Mathematical Sciences — 2005

16. Journal of Function spaces and Applications   2004
15. Indiana University Mathematics Journal
14. Proceedings of the American Mathematical Society   2003
13. Proceedings of the American Mathematical Society
12. Proceedings of the Royal Society of Edinburgh
11. International Journal of Mathematics and Mathematical Sciences
10. Israel Science Foundation
 9. Proceedings of the American Mathematical Society   2002
 8. Proceedings of the Royal Society of Edinburgh
 7. Journal of Functional Analysis
 6. Contemporary Mathematics: Trends in Banach spaces and Operator Theory
 5. Journal of Australian Mathematical Society   2001
 4. Prentice Hall
 3. International Journal of Mathematics and Mathematical Sciences
 2. Far East Journal of Mathematical Sciences   2000
 1. Journal of Functional Analysis

Reviewer for Mathematical Reviews

44. Physical Review A   2022
43. Journal of Mathematical Analysis and Applications   2016
42. Studia Mathematica
41. Michigan Math. J.
40. Israel Journal of Math.   2014
39. Ann. Inst. Fourier Grenoble   2013
38. Non-linear Analysis
37. J. Approximation Theory
36. Positivity   2012
35. J. Functional Analysis   2011
34. Nonlinear Analysis   2010
33. J. Functional Analysis
32. Fundamenta Mathematicae
31. Acta Mathematica Sinica
30. Fundamenta Mathematicae
29. Int. J. Math. Anal.   2009
28. Banach spaces and their applications in analysis, Walter de Gruyter, Berlin 2007.
27. J. Math. Anal. Appl.
26. Contemporary Mathematics   2008
25. Archiv der Mathematik
24. Studia Mathematica
23. J. London Math. Soc.   2007
22. RACSAM Rev. R. Acad. Cienc. Exactas Fis. Nat. Ser. A Mat.
21. Bull. Cl. Sci. Math. Nat. Sci. Math.
20. J. Korean Math. Soc.   2006
19. J. Funct. Anal.   2005
18. Israel J. Math.

17. Math. Rep. (Bucur.)
16. Chinese Ann. Math. Series B
15. Hokkaido Mathematical Journal   2004
14. Sequences spaces and Applications   2003
13. Bull. Fac. Educ. Utsunomiya Univ.
12. Nonlinear Functional Analysis and Applications   2002
11. Acta Math. Hungar.
10. Set Valued Analysis
 9. Bull. Australian Mathematical Society
 8. Extracta Math.   2001
 7. Nonlinear Funct. Anal. Appl.
 6. Comment. Math. Univ. Carolinae
 5. Israel Journal of Mathematics   1999
 4. Contemporary Mathematics
 3. Functional Analysis, Conference proceedings, Narosa, New Delhi   1998
 2. Functional Analysis, Conference proceedings, Narosa, New Delhi
 1. Atti Sem. Mat. Fis. Univ. Modena

Other Reviewing

Reviewer for Math Zentralblatt.

Book Reviews

4. *Discrete Methods in Functional Analysis*, M Mursaleen. CRC Press   2015
3. *Calculus*, Anton, Bivens, Davis, Editor: Wiley (8th edition).   2006
2. *Ramsey methods in Analysis*, S.A. Argyros, S. Todorcevic, Editor: Birkhauser.   2005
1. *Calculus*, J. Rogawski, Editor: Freeman.

External evaluator for cases of hiring or tenure and promotion in the following Universities:

- University of Ioannina-Greece, (1 case in 2022, 1 case in 2023),
- National Technical University of Athens-Greece (1 case in 2014 and 1 case in 2019),
- University of Patras-Greece (1 case in 2018, 1 case in 2022),
- University of Athens-Greece (1 case in 2017, 2 cases in 2022),
- United Arab Emirates University (1 case in 2015),
- Technical University of Crete, (1 case in 2013 and 2 cases in 2014),
- St. Luis University (1 case in 2013),

Organizer of mathematical conferences:

Casa Mathematica Oaxaca,   9/2/18-9/7/18
    Quantum Transport Equations and Applications (18w5059)
    Co-organizer with Roberto Quezada, Eric Carlen, and Franco Fagnola.

AMS Regional Meeting: Special Session on Banach spaces   03/16/01-03/18/01
    University of South Carolina at Columbia
    co-organizer with S.J. Dilworth and M. Girardi

Other services to mathematical community:

I wrote recommendation letters for students not affiliated with the University of South Carolina during the years:
2021 (1 letter).

SERVICE TO SOUTH CAROLINA

Volunteer in the high school math competition during the years:
2012, 2013, 2018, 2019, 2020, 2023, 2024, 2025.

Volunteer judge for the Engineering and Science fair of South Carolina:
2015.

Volunteer for practice exam for AP placement Calculus test for graduating South Carolina high school students:
2019.