

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

American Physical Society	2019-present
Association QPIDA	2023-present

RESEARCH

EDITORIAL WORK

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

PUBLICATIONS

In Preparation

- [40] G. Androulakis, M. Ziemke, *The exercise ladder in functional analysis*, a textbook for a two-semester graduate course in functional analysis.

Submitted

- [39] G. Androulakis, W. Rabins, *Optimal lower bound of the average indeterminate length lossless quantum block encoding*.

Accepted

- [38] G. Androulakis, T.C. John, *Petz-Rényi Relative Entropy of Thermal States and their Displacements*. Accepted in Letters in Mathematical Physics.
- [37] G. Androulakis, T.C. John, *Relative Entropy via Distribution of Observables*. Accepted in Infin. Dimens. Anal. Quantum Probab. Relat. Top.

Appeared

- [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

- Theodoros Anastasiadis. Current PhD student. Summer 2022-present.
- Ryan McGaha. Ph.D. in 5/22. Title: *The existence and quantum approximation 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: Visiting Assistant Professor, Rudolph-Macon College.
- 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 coPI in the application of Dr. Tiju Cherian John.		2021-2023
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) PI, " <i>Isomorphic Theory of Banach Spaces</i> "	\$ 56,709	06/1999-07/2002
National Science Foundation (DMS-9623260) NSF Young Investigator	\$ 7,000	07/1998-08/1998

INVITED AND SUPPORTED PARTICIPATION IN WORKSHOPS

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

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 University 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

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
Indiana University- Purdue University at Indianapolis
A subsequence characterization of sequences spanning isomorphically polyhedral Banach spaces

10/1996
5. Workshop in Linear Analysis and Probability
Texas A & M University
Isomorphically polyhedral Banach spaces

08/1996
4. AMS Regional Meeting: Special Session on Banach spaces and related topics
University of Missouri, Columbia
Distorting mixed Tsirelson spaces

06/1996
3. Concentration on Infinite-dimensional Convex Geometry
Mathematical Sciences Research Institute, Berkeley
The ℓ_1 index as an invariance for distortion

02/1996
2. Workshop in Linear Analysis and Probability
Texas A & M University
Estimates of the ℓ_1 index for some mixed Tsirelson spaces

07/1995
1. AMS Annual Meeting: Special Session in Banach space Theory
University of Texas, San Antonio
On a question of R. Haydon, E. Odell and H. Rosenthal

01/1993

TEACHING

COURSES TAUGHT AT USC

Term	Course	Title	Enrollment	Class Avg	Overall instructor eval.
Spring 24	Math 242	Vector Calculus	44		
	Math/Phys/Csce	764 Q. Inf.	11		
	Math 899	Dissertation	1		
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	Calculus 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:

Hiring committee:

2022-2023, 2023-2024 (for Tenure track position, Data science position, and Bridge to faculty position).

Hiring Task-force committee for drafting a strategic hiring plan:

2023, 2024.

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.

Ph.D. theses committee member (for students that I did not supervise)

Mathew Gamel (2011), James Sweeney (2018), Jaree Hudson (2018), Taeho Kim (Statistics Department, 2019).

Comprehensive Exam Committee

8/2004, 8/2007, 8/2015, 8/2016, 8/2020, 8/2022, 8/2023.

Masters theses committee member (for students that I did not supervise)

Joseph Patterson (2001), Geoffrey Dillon (2004).

Calculus Textbook Committee

2003-2004, 2004-2005.

Graduate Advisory Council

Spring 2006-Spring 2008, Fall 2009-Spring 2019, Fall 2022-present.

Undergraduate Advisory Council

2002-2003, 2003-2004.

Chair of the Committee of tenured faculty

4/15/07-4/15/08, 4/15/13-4/15/14.

Chair of the Colloquium Committee

2000-2001.

Faculty Advisory Council

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

Physical Facilities Committee

2001-2002.

Undergraduate Adviser

2000-2001, 2001-2002, 2002-2003, 2003-2004, 2004-2005, 2005-2006, 2021-present.

Post tenure review committee

2006-2008, 2009-2011, 2015-2018, 2021-2023.

Textbook Committee

2004-2005.

Search committee for department chair
Fall 2011.

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

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

Practice AP Calculus Test Committee
2020-2022.

Events Committee
2020-2021.

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 (2 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 Interdisciplinary 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

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. Proceedings 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 2001
5. Journal of Australian Mathematical Society
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.

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.