Personal Information

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Research Interests

Global Analysis, Analysis and Partial Differential Equations on Riemannian Manifolds, Yang-Mills Heat Equation on Riemannian Manifolds.

Academic Positions

2017-Pres.	University of Cyprus, Department of Mathematics & Statistics
	Associate Professor
2011-2016	University of Cyprus, Department of Mathematics & Statistics
	Assistant Professor
2007-2011	Instituto Tecnológico Autónomo de México, Department of Mathematics
	Associate Professor C
2005-2007	University of California-Irvine, Department of Mathematics
	Visiting Assistant Professor
2004-2005	Cornell University, Department of Mathematics
	Postdoctoral Associate and Lecturer

Education

1998-2004   Cornell University
Ph.D. Mathematics, August, 2004
Advisors: Professor José Escobar and Professor Leonard Gross

2001   Cornell University
M.Sc. Mathematics

1998   University of North Carolina
B.Sc. Mathematics
Graduated with Highest Honors, Dean's List all four years, Minor in Physics.

Publications

A. In Refereed Journals

2024   Charalambous N., Lu Z. 'L^p spectral theory for the Laplacian on forms.'
arXiv:2401.02136, Submitted

2023   Charalambous N., Große N. 'On the L^p spectrum of the Dirac Operator.'
Journal of Geometric Analysis 44: 24pp, 2023

2023   Charalambous N., Lu Z. 'Connected essential spectrum: The case of differential forms.'
arXiv:2106.01992, To appear, Israel Journal of Mathematics

2023   Charalambous N., Rowlett J. 'The Laplace spectrum on conformally compact manifolds.'
arXiv:2306.09291, To appear, Transactions of the AMS

2023   Charalambous N., Große N. 'A note on the spectrum of magnetic Dirac operators.'
SIGMA 19, 102, 12 pages, 2023

2022   Charalambous N., Lu Z. 'A note on Cheeger's isoperimetric constant.'
Journal of Geometric Analysis 32: 14pp, 2022

2020   Charalambous N., Lu, Z. 'The spectrum of the Laplacian on forms over flat manifolds.'
Mathematische Zeitschrift 296:1-12, 2020

2020   Charalambous N. 'The Yang-Mills heat equation on three-manifolds with boundary.' (Invited survey article)
J. Stoch. Anal. 1, no. 4, Art. 10, 23 pp., 2020

2020   Charalambous N., Leal, H., Lu, Z. 'Spectral Gaps on Complete Riemannian manifolds.'
Contemporary Mathematics 756: 57–67, 2020.

2019   Charalambous N., Lu, Z. 'The spectrum of continuously perturbed operators and the Laplacian on forms.'
Differential Geometry and Applications 65:227–240, 2019

2019 Charalambous N., Rowlett J. *'The heat trace for the drifting Laplacian and Schrödinger operators on manifolds.'*

Asian Journal of Mathematics 23: 539–559, 2019

2017 Charalambous N., Gross, L. *'Initial Behavior of Solutions to the Yang-Mills Heat Equation.'*

Journal of Mathematical Analysis and Applications 451:873–905, 2017.

2016 Bosch, C., Cabo, M., Charalambous N., et al, *'Finding the middle ground bisectors in p-geometry.'*

Journal for Geometry and Graphics 20: 23–32, 2016

2015 Charalambous N., Lu Z. *'Heat kernel estimates and the essential spectrum on weighted manifolds.'*

Journal of Geometric Analysis 25:536-563, 2015

2015 Charalambous N., Gross L. *'Neumann Domination for the Yang-Mills Heat Equation.'*

Journal of Mathematical Physics 56, 073505, 2015

2015 Charalambous N., Lu Z. *'The L^1 Liouville Property on Weighted Manifolds.'*

Contemporary Mathematics 653:65-79, 2015

2014 Charalambous N., Lu Z. *'On the Spectrum of the Laplacian.'*

Mathematische Annalen 359:211-238, 2014

2013 Charalambous N., Gross L. *'The Yang-Mills Heat Semigroup on Three-Manifolds with Boundary.'*

Communications in Mathematical Physics 317:727-785, 2013

2010 Charalambous N. *'Eigenvalue Estimates for the Bochner Laplacian and Harmonic Forms on Complete Manifolds.'*

Indiana University Mathematics Journal 59:183-206, 2010

2007 Charalambous N. *'On the Equivalence of Heat Kernel Estimates and Logarithmic Sobolev Inequalities for the Hodge Laplacian.'*

Journal of Differential Equations 233:291-312, 2007

2007 Charalambous N. *'L^2 Harmonic Forms and the Structure of Complete Manifolds.'*

Proceedings of the International Conference in Memory of José F. Escobar, Revista Matemáticas: Enseñanza Universitaria de la ERM, 2007.

2005 Charalambous N. *'On the L^p Independence of the Spectrum of the Hodge Laplacian on Non-Compact Manifolds.'*

Journal of Functional Analysis 224:22-48, 2005

B. Book Chapters

2015 Charalambous N., Lu Z., Rowlett J. *'Eigenvalue Estimates on Bakry-Émery Manifolds.'*

Elliptic and Parabolic Equations, Springer Proceedings in Mathematics and Statistics 119:45-61, 2015

C. Theses

2004   Charalambous N. *'On the L^p Independence of the Spectrum of the Hodge Laplacian and Logarithmic Sobolev Inequalities on Non-Compact Manifolds.'*
<div align="right">Ph.D. Dissertation, Cornell University</div>

1998   Charalambous N. *'Foliations on Surfaces.'*
<div align="right">B.Sc. Honors Thesis, University of North Carolina at Chapel Hill</div>

Research Grants

2021-2023   *University of Cyprus* *Internal Grant*
Euros 37.000

2014-2016   *University of Cyprus* *Start-Up Grant*
Euros 12.300

2011-Pres.   *University of Cyprus* *Annual Research Funding*
Euros 4.500/year (approx.)

2009-2011   *CONACYT* *Sistema Nacional de Investigadores, Level 1*
Research Supplement from the National Research Council of Mexico. Award based on scientific excellence.
Euros 7500/yr (approx.)

Scholarships and Awards

2010   *Instituto Tecnológico Autónomo de México* *Teaching Award*

2006   *Association for Women in Mathematics* *Travel Grant*
Partial support to participate in a Conference at Universidad del Valle, Cali, Colombia.

2004   *Cornell University, Department of Mathematics* *Graduate Research Assistant*
Funded for one semester from the NSF grant of Professor José Escobar.

2002   *NSF, IMPA, and Einaudi Center at Cornell University* *Research Travel Grant*
Funded for a three week research trip at IMPA, Rio de Janeiro, Brazil, to promote intellectual exchange among IMPA and the Department of Mathematics at Cornell.

2001   *Cornell University, Department of Mathematics* *Hutchinson Award*
Fellowship awarded to 3rd or 4th year students who are starting on their thesis, based on academic records. It provides relief from TA duties for one semester.

1998   *University of North Carolina, Department of Mathematics* *Alfred Brauer Prize*
Given annually to the undergraduate who has demonstrated a high degree of ability in the fields of algebra or number theory.

1997	*University of North Carolina, Department of Mathematics Archibald Henderson Prize*
	Given annually to the undergraduate who has demonstrated both a high degree of mathematical ability and the greatest promise for originality in the field.
1994-1998	*Cyprus Fulbright Committee Fulbright Scholarship*
	A four-year merit-based scholarship given to Cypriot students to partially fund their undergraduate studies at an accredited university in the United States.
1994	*Association of Cyprus Physicists National Physics Olympiad, Third Prize*
	Participation in the 25th International Physics Olympiad in Beijing China.

Selected Conference Talks/Seminars

Mar. 2023	*SFB-Lecture, Faculty of Mathematics of Universität Regensburg, Germany (Invited)*
July 2022	*First Conference of Greek Women in Mathematics, Athens, Greece (Invited)*
June 2022	*Dirac operators in Topology, Geometry and Representation Theory, Cortona, Italy (Invited)*
April 2022	*Geometry and analysis on non-compact manifolds, CIRM meeting, Luminy, France (Invited Speaker/Participant)*
Mar. 2022	*Spectral Geometry in the Clouds Seminar (Invited Speaker)*
Nov. 2021	*Geometry & Topology Seminar at Durham University, Durham University, UK (Invited Online Speaker)*
Dec. 2020	*Virtual Mini Workshop in Geometric Analysis, Universidad de los Andes, Colombia, Virtual Workshop (Invited Speaker)*
July 2020 Postponed	*Isoperimetric Inequalities in Geometric Partial Differential Equations, MATRIX research programs, Creswick, Victoria Australia (Invited Speaker/Participant) - Postponed due to Covid*
Aug. 2019	*40th International Conference on Quantum Probability and Infinite-Dimensional Analysis, Columbus, Ohio, USA (Invited Speaker)*
May 2019	*Analysis Seminar, Cornell University, Department of Mathematics, Ithaca, NY, USA*
Mar. 2019	*PDE Seminar, Technion Institute of Technology, Department of Mathematics, Haifa, Israel*
Sept. 2018	*Analysis of Differential Operators on Manifolds, Freiburg, Germany (Invited Speaker)*
Sept. 2018	*Modern Mathematical Methods in Science and Technology 2018, Kalamata, Greece (Invited Talk)*
Jun. 2018	*First Congress of Greek Mathematicians -Geometry Session, Athens, Greece (Invited Talk)*
May 2018	*EWM German Chapter Conference 2018, Heidelberg, Germany (Contributed Talk)*
Jun. 2017	*Analysis and Topology in Interaction 2017, Cortona, Italy (Invited Speaker)*
Mar. 2017	*International Conference on PDEs, Geometric Analysis and Functional Inequalities, University of Sydney, Australia (Invited Speaker)*

Feb. 2017	*Stochastic Analysis Seminar, Mathematical Institute, Oxford, UK*
Jan. 2017	*Youth Geometric Analysts' Forum 2017, Tsinghua Sanya International Mathematics Forum, Sanya, China* (Invited Speaker)
May 2017	*Lebanese International Conference on Mathematics and Applications, Lebanese University of Beirut, Lebanon* (Plenary Speaker-unable to attend)
Dec. 2016	*Geometric and Spectral Methods in Partial Differential Equations, Banff International Research Station-CMO, Oaxaca, Mexico* (Invited Speaker)
June 2016	*Technion -Israel Intitute of Technology, Department of Mathematics, Israel*
May 2016	*Contemporary Algebra and Geometry in Greece, Crete, Greece* (Invited Lecture)
Mar. 2016	*Chalmers University of Technology, Department of Mathematical Sciences, Sweden*
Oct. 2015	*Analysis Symposium, Samos, Greece* (Invited Talk)
July 2015	*EquaDiff Conference, Lyon, France* (Contributed Talk)
May 2015	*CADS VIIth Conference, Nahariya, Israel* (Invited Talk)
Oct. 2014	*AMS Sectional Meetings: Special Session on Recent Progress in Geometric Analysis I, San Francisco State University, USA* (Invited Talk)
July 2014	*XVIII Escola de Geometria Diferencial, Brasilia, Brazil* (Invited Talk)
June 2014	*Workshop on Analysis of PDEs: Theory, Methods and Applications, Protaras, Cyprus* (Invited Talk)
Jan. 2013	*AMS-MAA Joint Meetings: Special Session on the Dirac and Laplace Operators in Global Analysis and Geometry, San Diego, USA* (Invited Talk)
Aug. 2013	*Differential Geometry at CIMAT, Centro de Investigación en Matemáticas, Guanajuato, Mexico* (Invited Talk)
May 2013	*CADS VIth Conference: Special Session in General Relativity and Geometric Analysis, Nahariya, Israel* (Invited Talk)
Jan. 2011	*AMS-MAA Joint Meetings, Special Session on Stochastic Analysis and Mathematical Physics, New Orleans, USA* (Invited Talk)
Feb. 2011	*University of California-Irvine, Department of Mathematics*
Mar. 2011	*Instituto de Investigaciones en Matematicas Aplicadas y en Sistemas, UNAM, Mexico*
Nov. 2010	*Instituto de Matematicas, UNAM, Mexico*
Apr. 2010	*Instituto de Matematicas, UNAM, Mexico*
Apr. 2010	*Instituto de Matematicas, UNAM, Mexico*
Oct. 2009	*VIII Americas Conference on Differential Equations -PASI 2009, Veracruz, Mexico* (Invited Talk)
June 2009	*Centro de Investigación en Matemáticas, Guanajuato, Mexico*
Feb. 2009	*Instituto de Matemáticas, Cuernavaca, Mexico*
Oct. 2008	*Congreso de la Sociedad Matemática Mexicana, Valle de Bravo, Mexico* (Invited Talk)
Jan. 2008	*CINVESTAV, Zacatenco, Mexico*
Sept. 2007	*28-th Conference on Quantum Probability and Related Topics, Centro de Investigación en Matemáticas, Guanajuato, Mexico* (Invited Talk)
Sept. 2007	*Instituto Tecnológico Autónomo de México, Department of Mathematics, Mexico*

June 2007	*University of California- Santa Barbara, Department of Mathematics, USA*
Apr. 2007	*Chapman University, Department of Mathematics, USA*
Mar. 2007	*University College of London, Department of Mathematics, UK*
Sept. 2006	*Duke University, Department of Mathematics, USA*
Jan. 2006	*International Conference in Memory of José Escobar, Universidad del Valle, Cali, Colombia* (Invited Talk)
Nov. 2005	*University of California-San Diego, Department of Mathematics, USA*
Oct. 2005	*University of California-Irvine, Department of Mathematics, USA*
July 2002	*Instituto Nacional de Matemática Pura e Aplicada (IMPA)- Rio de Janeiro, Brazil*

Conference/Special Session Organizer

Sept. 2022	*Panhellenic Analysis Conference, University of Cyprus* Co-organizer of the Conference
May 2021 Postponed	*Contemporary Aspects of Analysis III, Protaras, Cyprus* Co-organizer of the Conference
May 2019	*Contemporary Aspects of Analysis II, Protaras, Cyprus* Co-organizer of the Conference
May 2017	*Contemporary Aspects of Analysis, Protaras, Cyprus* Co-organizer of the Conference
May 2017	*Panhellenic Geometry Conference, Cyprus* Co-organizer the Conference
Aug. 2013	*Mathematical Congress of the Americas 2013, Centro de Investigación en Matemáticas, Guanajuato, Mexico* Co-organizer of Special Session in Differential Geometry
June 2010	*Joint Meeting of the American Mathematical Society and Sociedad Matemática Mexicana, University of California at Berkeley, California* Co-organizer of Special Session on Analytic Aspects in Differential Geometry

Graduate Students

Present	*Petros Siasos, Ph.D. student.*
2014	*Ilias Tergiakidis, M.Sc. January 2014.* Ph.D. graduate from the Mathematisches Institut Universität Göttingen

Professional service

• Member of the Editorial Board of the Journal of Stochastic Analysis since 2020.

• Referee for articles submitted to: Journal of Functional Analysis, Journal of Geometric Analysis, Journal of Nonlinear Analysis -A, Journal of Mathematical Analysis and Applications, Mathematische Zeitschrift and others.

• Reviewer for: Mathematical Reviews (MR).

• Referee for proposals submitted to CONACYT (National Research Council of Mexico).

- External member in various hiring and promotion commitees in Greece through APELLA.
- Local Coordinator for Greek Women in Mathematics.
- External Examiner for Ph.D. candidates in other Institutions.

Departmental Service

Department of Mathematics & Statistics, University of Cyprus:

2023-Pres.	Representative of the Faculty of Science to the Library Senate Committee
2023-Pres.	Publications Committee
2017-2020 & 2013-2014	
2020-2021	Graduate Studies Committee-Coordinator
2017-2018	Vice-Chair of the Department of Mathematics and Statistics
2017	Graduate Studies Committee
2015	Representative of the Department to the Faculty of Pure and Applied Sciences
2011-2013 & 2015	Undergraduate Studies Committee
2017-Pres	Co-Organizer of MathClub
2018-2022.	Representative of the Department to the Internal Committee of Evaluation of Programs of the University of Cyprus
2011-Pres.	Member of the Evaluation Committee for various M.Sc. and Ph.D. students
2011-Pres.	Preparation of various Qualifying Exams for Ph.D. candidates
2014-2015	Member of the Committee for the reorganization of the curriculum of first year courses

Department of Mathematics, Instituto Tecnológico Autónomo de México:

2010-2011	Calculus I Coordinator
2009	Department Colloquium Coordinator

Participated in the following Conferences/Workshops

July 2023	University of Cyprus, Summer Academies for High School Students, Cyprus
Aug. 2022	Analytic and Geometric Aspects of Spectral Theory, BIRS-CMO, Oaxaca, Mexico
Mar. 2021	Stochastics and Geometry (Online), BIRS, Banff Int'l Reseach Station, Canada
Jan. 2016	Modern Riemannian Geometry, MSRI, University of California-Berkeley, USA
Jan. 2016	XXIIIrd Southern California Geometric Analysis Seminar, University of California-Irvine, USA
Jan. 2012	XIXth Southern California Geometric Analysis Seminar, University of California-Irvine, USA
Feb. 2011	XVIIIth Southern California Geometric Analysis Seminar, University of California-San Diego, USA
July 2009	V Summer School in Analysis and Mathematical Physics, Instituto de Matemáticas, Cuernavaca, Mexico

May 2008	*Workshop in Riemannian Geometry, Instituto de Matemáticas, Cuernavaca, Mexico*
Apr. 2008	*Geometry Festival, Duke University, USA*
Jan. 2008	*XVth Southern California Geometric Analysis Seminar, University of California-Irvine, USA*
Jan. 2007	*XIVth Southern California Geometric Analysis Seminar, University of California-San Diego, USA*
Sept. 2006	*Geometric Analysis and Nonlinear PDEs, MSRI, University of California-Berkeley, USA*
Jan. 2006	*XIIIth Southern California Geometric Analysis Seminar, University of California-Irvine, USA*
Mar. 2004	*Spectral Geometry Workshop, Centre de Recherches Mathématiques, Montreal, Canada*
July 2002	*XIIth Escola de Geometria Diferencial, Goiania, Brazil*
1999	*Summer Program in Exterior Differentiation, MRSI, University of California-Berkeley, USA*

Teaching Experience

2011-Pres.	*University of Cyprus, Department of Mathematics & Statistics*
	Riemannian Geometry (MAS 632-Graduate, MAS 432-Undergraduate), Topics in Geometry (MAS 640-Graduate Reading Course), Differentiable Manifolds (MAS 631-Graduate, MAS 431-Undergraduate), Topics in Geometry, (MAS 439), Ordinary Differential Equations II (MAS 403), Differential Geometry (MAS 331), Real Analysis (MAS 301), Complex Analysis (MAS 302), Multivariable Differential Calculus (MAS 201), Multivariable Integral Calculus (MAS 202), Calculus I (MAS 101), Service Courses: Calculus I (MAS 004,012,018,021), Calculus II (MAS 013, 026), Linear Algebra (MAS 016)
2007-2011	*Instituto Tecnológico Autónomo de México, Department of Mathematics*
	Complex Analysis, Analysis I, Dynamical Systems I, Dynamical Systems II, Calculus I, Calculus III, Calculus IV, Algebra for Engineers, Master's Introductory Math Course.
2005-2007	*University of California-Irvine, Department of Mathematics*
	Differential Geometry (Math 199-Reading course), Hyperbolic Geometry (Math 199-Reading course), Modern Geometries (Math 161), Elementary Differential Equations (Math 3D), Linear Algebra and Infinite Series (Math 2J), Calculus I (Math 2A)
2001-2005	*Cornell University, Department of Mathematics (As Instructor)*
	Calculus I (Math 111), Calculus II (Math 112), The Mathematical Experience (Math 103)
2003-2004	*Cornell University, Department of Mathematics* *Good Questions Project*
	Participated in an NSF funded project for the development and implementation of better course material for first-semester Calculus.

1998-2003 *Cornell University, Department of Mathematics (As Teaching Assistant)*
Differentiable Manifolds (Math 652-Graduate), Differential Geometry (Math 454), Topology (Math 453), Multivariable Calculus (Math 222), Honors Calculus (Math 122)

Professional Memberships

1999-Pres. *American Mathematical Society*

2021-Pres. *Greek Women in Mathematics, Local Coordinator*

2008-2014. *Sociedad Matemática Mexicana*

1999-2007 *Association for Women in Mathematics*

Languages Spoken

- Greek (mother tongue)
- English (fluent, academic teaching proficiency)
- Spanish (fluent, academic teaching proficiency)
- French (academic reading proficiency)