

Contact Information

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Personal Data

Date of Birth: January 1987
Place of Birth: Athens, Greece
Nationality: Greek

Education

Ph.D. University of Cambridge (UK) 2008–2012
Adviser: Professor Mihalis Dafermos
Thesis Title: “Stability and Instability of Evolution Equations in General Relativity”
M.A.St. Mathematics University of Cambridge (UK) 2006–2007
B.A. Mathematics University of Patras (GR) Final result: 100/100 2004–2006

Employment

Assistant Professor, University of Toronto (Canada), 2016–...

Assistant Professor, Princeton University (USA), 2015–2017

Veblen Research Instructor, Princeton University & Institute for Advanced Study
USA (joint position), 2012–2015

Research Interests:

Differential Geometry, Geometric Analysis, Partial Differential Equations, Analysis,
General Relativity

Research Publications

1. (joint with Y. Angelopoulos and D. Gajic) *Global existence for non-linear wave equations satisfying the null condition on extremal Reissner–Nordström*, in preparation 2016
2. (joint with Y. Angelopoulos and D. Gajic) *Sharp trace estimates on null infinity*, in preparation, 2016
3. (joint with Y. Angelopoulos and D. Gajic) *Sharp decay for solutions to the wave equation on extremal Reissner–Nordström and applications*, preprint 2016
4. (joint with Y. Angelopoulos and D. Gajic) *The Price’s law for all angular frequencies*, preprint 2016

5. (joint with Y. Angelopoulos and D. Gajic) *Scattering theory for the wave equation on extremal black holes*, in preparation
6. (joint with Y. Angelopoulos and D. Gajic) *Late-time asymptotics for the wave equation on spherically symmetric, stationary spacetimes*, arXiv:1612.01566
7. (joint with Y. Angelopoulos and D. Gajic) *A vector field approach to almost-sharp decay for the wave equation on spherically symmetric, stationary spacetimes*, arXiv:1612.01565
8. (joint with Y. Angelopoulos and D. Gajic) *Asymptotic blow-up for a class of semilinear wave equations on extremal Reissner-Nordström spacetimes*, arXiv:1612.01562
9. (joint with Y. Angelopoulos and D. Gajic) *The trapping effect on degenerate horizons*, to appear in *Annales Henri Poincaré*, arXiv:1512.09094 (2015)
10. *On a foliation-covariant elliptic operator on null hypersurface*, *International Mathematical Research Notices* DOI: 10.1093 (2014)
11. *The characteristic gluing problem and conservation laws for the wave equation on null hypersurfaces*, submitted, 58 pages, available online at arXiv:1310.1365
12. *Nonlinear scalar instability on extremal black holes*, *Physical Review D* **87** (2013), 084052
13. *A note on instabilities of extremal black holes under scalar perturbations from afar*, *Classical and Quantum Gravity* **30** (2013) 095010
(Article selected by the Editorial Board of *Classical and Quantum Gravity* to be one of the journal's Highlights for 2012–2013)
14. *Horizon instability of extremal black holes*, *Advances in Theoretical and Mathematical Physics* **19** (2015), 507–530
15. *Decay of axisymmetric solutions of the wave equation on extreme Kerr backgrounds*, *Journal of Functional Analysis* **263** (2012), 2770–2831
16. *Stability and instability of extreme Reissner-Nordström black hole spacetimes for linear scalar perturbations I*, *Communications in Mathematical Physics* **307** (2011), 17–63
17. *Stability and instability of extreme Reissner-Nordström black hole spacetimes for linear scalar perturbations II*, *Annales Henri Poincaré* **8** (2011), 1491–1538
18. *The wave equation on extreme Reissner-Nordström black hole spacetimes: stability and instability results*, <http://arxiv.org/abs/1006.0283>, 117 pages

Survey Publications

1. (Joint with Igor Rodnianski) *Global behaviour of solutions to the Einstein's equations*, *General Relativity and Gravitation*, Cambridge University Press

Academic Grants, Scholarships and Awards

- Papastratou Prize in Geometry, Academy of Athens, 2016, \$3,500
- NSF Grant Award DMS-1600643, 2016–2019, \$176,000
- Alfred P. Sloan Research Fellowship, 2016–2020
- NSF Grant Award DMS-1265538, 2013–2016, \$148,000
- Member of the Institute for Advanced Study, 2012–2015
- General Relativity & Analysis at Princeton (GRAP) Scholar, Fall 2012
- Visiting Scholar, Columbia University, Fall 2012
- Princeton Research Grant, 2013–2016
- Institute for Advanced Study Research Grant, 2013–2014
- Cambridge University Research and Travel Grant, 2008–2012
- Bodossaki Scholarship, 2008–2012
- Vergiotis Scholarship, 2006–2007
- Vardinogiannis Scholarship, 2005–2007
- IKY Scholarship, 2004–2006

Invited Talks

1. Canadian Mathematical Society 2016 Meeting, December 2–5, 2016
2. Analysis seminar, Rutgers University, November 1, 2016
3. Analysis seminar, National Technical University, Athens, Greece, September, 2016
4. Clay Institute and LMS Research School, Lecture, Reading, UK, July 6, 2016
5. Department Colloquium, Haverford College, April 18, 2016
6. AMS meeting, Stony Brook University, March 19–20, 2016
7. Complex Geometry Seminar, Columbia University, February 18, 2016
8. Department Colloquium, University of Toronto, January 14, 2016
9. Conference in Mathematical General Relativity, TSIMF, Sanya, China, January 5–9, 2016
10. Department Colloquium, UPenn, December 11, 2015
11. Analysis seminar, UPenn, October 14, 2015

12. Mathematical Aspects of General Relativity, Oberwolfach, July 12–18, 2015
13. Equadiff Conference, Lyon, France, July 6–10, 2015
14. International Conference in General Relativity, University of Toronto, Fields Institute, June 1–12,
15. Mathematics Undergraduate Colloquium, Princeton University, February 11, 2015
16. Analysis seminal, UCLA joint with Caltech, Los Angeles, February 6, 2015
17. Mathematical Problems in General Relativity, Simons Center for Geometry and Physics, Stony Brook, January 19–23, 2015
18. Department Colloquium, University of Toronto, January 8, 2015
19. Department Colloquium, Reading University, UK, November 3, 2014
20. International Conference in Topology and its applications, Greece, July 4–7, 2014
21. Analysis seminar, Reading University, UK, January 17, 2014
22. Workshop in non-linear wave equations, Oxford University, UK, January 12, 2014
23. Initial Data and Evolution Problems in General Relativity, MSRI Workshop, Berkeley, November 18, 2013
24. New York General Relativity seminar, Columbia University, CUNY, SUNY, November 8, 2013
25. General Relativity seminar, Princeton University, October 8, 2013
26. Postdoctoral Talks, Institute for Advanced Study, September 24, 2013
27. Analysis seminar, Princeton University, September 16, 2013
28. Theoretical physics seminar, King's College London, May 30, 2013
29. Conference on nonlinear wave equations, Paris, May 22–24, 2013
30. Analysis seminar, Johns Hopkins University, March 4, 2013
31. Analysis seminar, University of Pennsylvania, February 26, 2013
32. Analysis seminar, University of Toronto, February 1, 2013
33. FRG Workshop on Relativity, University of Miami, December 18–21, 2012
34. General Relativity seminar, Columbia University, New York, September 28, 2012
35. Postdoctoral Talks, Institute for Advanced Study, September 25, 2012

36. Mathematical Aspects of General Relativity, Oberwolfach, Jul. 29–Aug. 4, 2012
37. 13th Marcel Grossmann Meeting, Stockholm, July 1–7, 2012
38. Recent Developments in Gravity, Chania, Greece, June 20–23, 2012
39. Workshop on Relativity, University of Miami, January 11–14, 2012
40. Analysis seminar, MIT, December 13, 2011
41. General Relativity seminar, Princeton University, December 9, 2011
42. “Do we understand gravity?”, IOP Meeting, London, September 16, 2011
43. General Relativity seminar, DAMTP, University of Cambridge, May 13, 2011
44. PDE seminar, Trinity College of Dublin, April 1, 2011
45. PDE seminar, Max Planck Institute, Berlin, February 21, 2011
46. Seminar in Mathematical Physics, FORTH/ICE-HT, Greece, January 26, 2011
47. PDE seminar, University of Cambridge, November 10, 2010
48. Seminar in Euclidean Geometry, University of Birmingham, April 12, 2010
49. Geometry seminar, University of Patras, September 10, 2009

Participation in Conferences

1. Analysis, PDE’s, and Geometry, Princeton University, January 26–29, 2016
2. Current Topics in Mathematical physics, Aarhus, July 26–31, 2010
3. Nonlinear PDE and Free Boundary Problems, Warwick, 2009
4. Evolution Equations, Clay Summer School, Zurich, 2008
5. International Congress of Mathematicians (ICM), Spain 2006
6. International Conference in Topology and its Applications, Greece 2006

Teaching

Undergraduate Courses:

Princeton University:

- MAT 202: F2014-15, S2013-14, MAT2015: S2016

Cambridge University (over 1,000 hours of supervisions)

- *Linear Analysis, Linear Algebra, Analysis II*, Fall 2011
- *Geometry of Curved Spaces, Differential Geometry*, Spring 2010
- *Linear Analysis, Linear Algebra, Analysis II*, Fall 2010

- *Geometry of Curved Spaces, Differential Geometry*, Spring 2009
- *Metric & Topological Spaces, Linear Algebra, Analysis II*, Fall 2009
- *Geometry of Curved Spaces, Differential Geometry*, Spring 2008

Graduate Courses:

- *Hyperbolic Differential Equations*, Cambridge Centre for Analysis, 2 Lectures, Fall 2010
- *General Relativity*, Columbia University, New York, Fall 2012

Academic Employment

- Undergraduate Teaching Assistant,
Department of Mathematics, University of Cambridge, 2008–2012
- STEP Marking Examination, University of Cambridge, 2–13 July 2011
- STEP Marking Examination, University of Cambridge, 10–17 July 2012

Journal referee: *Annals of Mathematics, Annals of PDEs, Communications in Mathematical Physics, Classical and Quantum Gravity, Annales Henri Poincaré, International Mathematical Research Notices, Journal of EMS*

Book reviewer: *Springer*

Synergistic activities

- Graduate Committee Member, University of Toronto
- Princeton Analysis Seminar Co-organizer
- Graduate Committee Member, Princeton University
- 2015 LMS–CMI Summer School Co-organizer, July 4–8 2016, Reading University, UK
- Geometry Festival Conference Co-organizer, April 8–10 2016, Princeton University

Distinctions

1. Prize for excellence in undergraduate studies by University of Patras
2. Bronze medal (2003, 2004) in the International Mathematical Olympiad (IMO)
3. Bronze medal (2002, 2003) in the Balkan Mathematical Olympiad (BMO)
4. Bronze (2002), Silver (2003), Gold (2004) medal in the Mediterranean Mathematical Olympiad
5. Gold medal in the Junior Balkan Mathematical Olympiad, Cyprus 2002