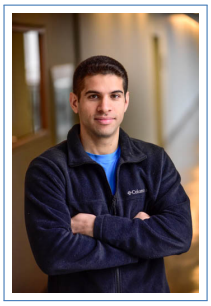

Stefanos Aretakis

Curriculum Vitae

Personal Data

Place and Date of Birth: Athens, Greece | January 1987
Address: 1265 Military Trail, Toronto, ON. M1C 1A4, Canada
Email: aretakis@math.toronto.edu,

Academic Employment

2022-... **Associate Professor**
Department of Computer and Mathematical Sciences
University of Toronto Scarborough
Toronto, Canada

2022-... **Associate Professor**
Department of Mathematics
University of Toronto St. George
Toronto, Canada

2016-2022 **Assistant Professor**
Department of Computer and Mathematical Sciences
University of Toronto Scarborough
Toronto, Canada

2016-2022 **Assistant Professor**
Department of Mathematics
University of Toronto St. George
Toronto, Canada

2015-2016 **Assistant Professor**
Department of Mathematics
Princeton University
Princeton, USA

2012-2015 **Veblen Research Instructor**
Department of Mathematics
Princeton University
Princeton, USA

2012-2015 **Veblen Research Instructor**
School of Mathematics
Institute for Advanced Study
Princeton, USA

Research Interests

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

Education

Ph.D. **University of Cambridge**, UK
2008-2012 Advisor: *Professor Mihalis Dafermos*
Thesis title: *"Stability and instability of evolution equations in general relativity"*

M.A.St. **University of Cambridge**, UK
2006-2007 Advisor: *Professor Peter Johnstone*
Thesis title: *"Synthetic Differential Geometry"*

B.A. **University of Patras**, Greece
2004-2006 Final result: 10/10

Grants & Awards

2021 **IUPAP Young Scientist Prize in Mathematical Physics**
2021 **Bodossaki Distinguished Young Scientist Award**
2021 **UTSC Pre-tenure Faculty Research Award – Science**, C$2,500
2018–2023 **Early Research Award**, Ontario MRIS, C$190,000
2017–2022 **NSERC Grant Award** 06103, C$150,000
2017–2019 **Connaught New Researcher Fellowship**, C$10,000
2016 **Papastratou Prize in Geometry**, Academy of Athens, C$4,500
2016–2020 **Start-up Grant**, University of Toronto
2016–2019 **NSF Grant Award** DMS–1600643, C$227,500
2016–2020 **Alfred P. Sloan Research Fellowship**, C$71,500
2015–2016 **Start-up Grant**, Princeton University
2013–2016 **NSF Grant Award** DMS–1265538, C$192,400
2012–2015 **Member of the Institute for Advanced Study**, Princeton, New Jersey
2012–2015 **Instructor Research Grant**, Princeton University
2012–2015 **Instructor Research Grant**, Institute for Advanced Study,
2008–2012 **Student Research and Travel Grant**, Cambridge University,

Ph.D. Students

2012-2015 Yannis Angelopoulos (co-advisor)
2017–2022 Marios Apetroaie
2017–2022 Eva Politou
2017–2022 Eric Massoud
2019–2023 Saeyon Mylvaganam

Post-doctoral Supervision

2017-2020 Stefan Czimek
2019-2021 Thomas Johnson

Research Publications

Citations: 1066 (source Google Scholar)

1. (joint with S. Czimek and I. Rodnianski) *Characteristic gluing to the Kerr family and application to spacelike gluing*, arXiv:2107.02456
2. (joint with S. Czimek and I. Rodnianski) *The characteristic gluing problem for the Einstein vacuum equations. Linear and non-linear analysis*, arXiv:2107.02449
3. (joint with S. Czimek and I. Rodnianski) *Characteristic gluing to the Kerr family and application to spacelike gluing*, arXiv:2107.02456
4. (joint with Y. Angelopoulos and D. Gajic) *Late-time tails and mode coupling of linear waves on Kerr spacetimes*, arXiv:2102.11884, to appear in **Advances in Mathematics**
5. (joint with Y. Angelopoulos and D. Gajic) *Price's law and precise late-time asymptotics for subextremal Reissner-Nordström black holes*, arXiv:2102.11888, submitted
6. (joint with Y. Angelopoulos and D. Gajic) *Late-time asymptotics for the wave equation on extremal Reissner–Nordström backgrounds*, **Advances in Mathematics 375** (2020), arXiv:1807.03802, 139 pages
7. (joint with Y. Angelopoulos and D. Gajic) *Scattering theory for the wave equation on extremal black holes*, **Communications in Mathematical Physics 380** (2020), 323–408
8. (joint with Y. Angelopoulos and D. Gajic) *Non-linear scalar perturbations of extremal Reissner–Nordström spacetimes*, **Annals of PDE 6** (2020), 1–124
9. (joint with Y. Angelopoulos and D. Gajic) *Horizon hair of extremal black holes and measurements at null infinity*, **Physical Review Letters 121**, 131102 (2018)
   (Article selected to be a PRL Editors' Suggestion)
10. (joint with Y. Angelopoulos and D. Gajic) *Asymptotics for scalar perturbations from a neighborhood of the bifurcation sphere*, **Classical and Quantum Gravity 35** (2018), arXiv:1802.05692, 31 pages
11. (joint with Y. Angelopoulos and D. Gajic) *Logarithmic corrections in the asymptotic expansion for the radiation field along null infinity*, to appear in the **Journal of Hyperbolic Differential Equations**, arXiv:1712.09977 (2017), 30 pages
12. (joint with Y. Angelopoulos and D. Gajic) *Late-time asymptotics for the wave equation on spherically symmetric, stationary spacetimes*, **Advances in Mathematics 323** (2018), 529–621, arXiv:1612.01566
13. (joint with Y. Angelopoulos and D. Gajic) *A vector field approach to almost-sharp decay for the wave equation on spherically symmetric, stationary spacetimes*, **Annals of PDE 4** 15 (2018), arXiv:1612.01565
14. (joint with Y. Angelopoulos and D. Gajic) *The trapping effect on degenerate horizons*, **Annales Henri Poincaré 18** (2017), 1593–1633, arXiv:1512.09094
15. *The characteristic gluing problem and conservation laws for the wave equation on null hypersurfaces*, **Annals of PDE 3** (2017), 58 pages, arXiv:1310.1365

16. (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 (2016)
17. *On a foliation-covariant elliptic operator on null hypersurface*, **International Mathematics Research Notices 15** (2015), 6433–6469
18. *Nonlinear scalar instability on extremal black holes*, **Physical Review D 87** (2013), 084052
19. *A note on instabilities of extremal black holes under scalar perturbations from afar*, **Classical and Quantum Gravity 30** (2013) 095010
(Article selected to be one of the journal's Highlights for 2012–2013)
20. *Horizon instability of extremal black holes*, **Advances in Theoretical and Mathematical Physics 19** (2015), 507–530
21. *Decay of axisymmetric solutions of the wave equation on extreme Kerr backgrounds*, **Journal of Functional Analysis 263** (2012), 2770–2831
22. *Stability and instability of extreme Reissner–Nordström black hole spacetimes for linear scalar perturbations I*, **Communications in Mathematical Physics 307** (2011), 17–63
23. *Stability and instability of extreme Reissner–Nordström black hole spacetimes for linear scalar perturbations II*, ***Annales Henri Poincaré* 8** (2011), 1491–1538
24. *The wave equation on extreme Reissner–Nordström black hole spacetimes: stability and instability results*, http://arxiv.org/abs/1006.0283, 117 pages

Books

1. *Dynamics of extremal black holes* , **SpringerBriefs in Mathematical Physics**, Springer (2018), 131 pages
2. *An intuitive introduction to mathematical general relativity*, **Springer Graduate Textbooks**, Springer (2021), 300 pages

Book Chapters

1. (Joint with Igor Rodnianski) *Global behaviour of solutions to Einstein's equations*, General Relativity and Gravitation, **Cambridge University Press** (2015)

Invited Talks

1. Analysis seminar, **Imperial College London (UK)**, 14 October, 2022
2. Differential Geometry seminar, **McMaster University (Canada)**, 22 September, 2022
3. Fall 2020 Reunion Event, **ICERM (USA)**, July 25–August 12, 2022
4. International Conference on General Relativity and Gravitation, **Beijing (China)**, July 3–8, 2022
5. Special Program, Black Hole Initiative, **Harvard University (USA)**, April–May, 2022
6. At the Interface of Mathematical Relativity and Astrophysics workshop, **Banff Canada**, 25 April, 2022
7. UTSC OVPRI Research Excellence Speaker Series, **University of Toronto (Canada)**, 6 April, 2022
8. Greek Math Festival, **E.K.E.TE. (Greece)**, 6–7 April, 2022
9. IMACS International Conference, **University of Georgia (USA)**, 30 March– 1 April, 2022
10. HEP/GR Colloquim, **University of Cambridge (UK)**, 24 November, 2021
11. Online Math Seminar, **University of Kentucky (USA)**, 17 November, 2021
12. Online Colloquium seminar, **University of Cyprus (Cyprus)**, October 20, 2021
13. Workshop in mathematical general relativity, **Oberwolfach (Germany)**, 29 Aug – 4 Sep, 2021
14. International Congress on Mathematical Physics, **Geneva (Switzerland)**, August 4, 2021
15. Relativity seminar, **Oxford University (UK)**, June 29, 2021
16. Analysis seminar, **Stanford University (USA)**, April 23, 2021

17. Physics seminar, **University of Crete (Greece)**, November 24, 2020
18. Black Hole Initiative at **Harvard University (USA)**, November 17, 2020
19. PDE seminar at **Kentucky University (USA)**, November 17, 2020
20. Program in Advances in Computational Relativity, **ICERM-Brown University (USA)**, Fall 2020
21. Physics workshop, **National Technical University of Athens (Greece)**, December 21, 2019
22. Xmas Workshop, **National and Kapodistrian University of Athens (Greece)**, December 20, 2019
23. Conference on Geometric Analysis, **Guangxi University (China)**, Nanning, December 16–20, 2019
24. SIAM Conference on Analysis of PDE, **La Quinta (USA)**, December 11–14, 2019
25. AMS sectional meeting, **University of California Riverside (USA)**, November 9–10, 2019
26. Differential Geometry seminar, **University of California Riverside (USA)**, November 8, 2019
27. General Relativity, Geometry and Analysis program, **Institut Mittag–Leffler (Sweden)**, Fall 2019
28. Theoretical Physics seminar, **Perimeter Institute (Canada)**, September 19, 2019
29. Colloquium Talk, **University of Athens (Greece)**, July 16, 2019
30. Colloquium Talk, **University of Patras (Greece)**, June 4, 2019
31. Third Annual BHI Conference, **Harvard University (USA)**, May 20–22, 2019
32. Let's Talk Science Challenge, **University of Toronto (Canada)**, May 6, 2019
33. The 11th IMACS International Conference, **University of Georgia (USA)**, April 17–19, 2019.
34. Theoretical and Mathematical Physics Seminar, **City College of New York(USA)**, April 12, 2019.
35. The Gravity Initiative Inaugural Meeting, **Princeton University (USA)**, March 6–8, 2019.
36. Colloquium Talk, **University of Cyprus (Cyprus)**, September 12, 2018
37. Workshop in mathematical general relativity, **Oberwolfach (Germany)**, August 5–11, 2018
38. International Congress in Mathematical Physics, **Montreal (Canada)**, July 23–28, 2018
39. International Conference on Topology and its Applications, **Nafpaktos (Greece)**, July 7–11, 2018
40. Marcel Grossman Meeting- MG15, **Rome (Italy)**, July 1–7, 2018
41. First Congress of Greek Mathematicians, **Athens (Greece)**, June 25–30, 2018
42. Summer school in analysis, **MIT (USA)**, June 10–21, 2018
43. Conference on mathematical GR, **Institute Henri Poincaré (France)**, May 28–June 1, 2018
44. AMS Meeting, **Northeastern University (USA)**, Boston, April 21–22, 2018
45. Geometric analysis seminar, **University of Athens (Greece)**, February 23, 2018
46. Joint AMS and MAA conference, **San Diego (USA)**, California, January 10–13, 2018
47. Conference on PDEs, **King's College London (UK)**, January 8–11, 2018
48. Colloquium Talk, **University of Toronto (Canada)**, October 11, 2017
49. Workshop in Mathematical GR, **Central China Normal University (China)**, August 5–15, 2017
50. 24^{th} summer school in non-linear dynamics and complexity, **Volos (Greece)**, July 12–22, 2017
51. Analysis seminar talk, **University of Patras (Greece)**, July 2017
52. Conference in Hamiltonian Dynamics, **Moscow (Russia)**, June 15, 2017
53. Colloquium Talk, **Hellenic Mathematical Society (Greece)**, Patras, June 12 2017
54. Atlantic General Relativity Workshop, **Memorial University (Canada)**, St Jonh's, May 29–June 2, 2017
55. Conference of the black hole initiative, **Harvard University (USA)**, May 8–9, 2017
56. Fields symposium and colloquium talk, **Fields Institute (Canada)**, Toronto, March 31, 2017
57. Canadian Mathematical Society 2016 Meeting, **Niagara Falls (Canada)**, December 2–5, 2016
58. Analysis seminar, **Rutgers University (USA)**, November 1, 2016
59. Analysis seminar, **National Technical University of Athens (Greece)**, September, 2016
60. Clay Institute and LMS Research School, **Reading University (UK)**, July 6, 2016
61. Department Colloquium, **Haverford College (USA)**, April 18, 2016
62. AMS meeting, **Stony Brook University (USA)**, March 19–20, 2016
63. Complex Geometry Seminar, **Columbia University (USA)**, February 18, 2016
64. Department Colloquium, **University of Toronto, (Canada)**, January 14, 2016
65. Conference in Mathematical General Relativity, **TSIMF (China)**, Sanya, January 5–9, 2016
66. Department Colloquium, **UPenn (USA)**, December 11, 2015
67. Analysis seminar, **UPenn (USA)**, October 14, 2015
68. Mathematical Aspects of General Relativity, **Oberwolfach (Germany)**, July 12–18, 2015
69. Equadiff Conference, **Lyon (France)**, July 6–10, 2015
70. International Conference in General Relativity, **Fields Institute (Canada)**, June 1–12,
71. Mathematics Undergraduate Colloquium, **Princeton University (USA)**, February 11, 2015
72. Analysis seminal, **UCLA and Caltech (USA)** , Los Angeles, February 6, 2015
73. Problems in GR, **Simons Center for Geometry and Physics (USA)**, Stony Brook, Jan 19–23, 2015

74. Department Colloquium, **University of Toronto (Canada)**, January 8, 2015
75. Department Colloquium, **Reading University (UK)**, November 3, 2014
76. International Conference in Topology and its applications, **Nafpaktos (Greece)**, July 4–7, 2014
77. Analysis seminar, **Reading University (UK)**, January 17, 2014
78. Workshop in non-linear wave equations, **Oxford University (UK)**, January 12, 2014
79. Initial Data and Evolution Problems in GR, **MSRI Berkeley (USA)**, November 18, 2013
80. New York General Relativity seminar, **Columbia University, CUNY, SUNY (USA)**, November 8, 2013
81. General Relativity seminar, **Princeton University (USA)**, October 8, 2013
82. Postdoctoral Talks, **Institute for Advanced Study (USA)**, September 24, 2013
83. Analysis seminar, **Princeton University (USA)**, September 16, 2013
84. Theoretical physics seminar, **King's College London (USA)**, May 30, 2013
85. Conference on nonlinear wave equations, **Paris (USA)**, May 22–24, 2013
86. Analysis seminar, **Johns Hopkins University (USA)**, March 4, 2013
87. Analysis seminar, **University of Pennsylvania (USA)**, February 26, 2013
88. Analysis seminar, **University of Toronto (Canada)**, February 1, 2013
89. FRG Workshop on Relativity, **University of Miami (USA)**, December 18–21, 2012
90. General Relativity seminar, **Columbia University (USA)**, New York, September 28, 2012
91. Postdoctoral Talks, **Institute for Advanced Study (USA)**, September 25, 2012
92. Mathematical Aspects of General Relativity, **Oberwolfach (Germany)**, Jul. 29–Aug. 4, 2012
93. 13^{th} Marcel Grossmann Meeting, **Stockholm (Sweden)**, July 1–7, 2012
94. Recent Developments in Gravity, **Chania (Greece)**, June 20–23, 2012
95. Workshop on Relativity, **University of Miami (USA)**, January 11–14, 2012
96. Analysis seminar, **MIT (USA)**, December 13, 2011
97. General Relativity seminar, **Princeton University (USA)**, December 9, 2011
98. "Do we understand gravity?", IOP Meeting, **London (UK)**, September 16, 2011
99. General Relativity seminar, DAMTP, **University of Cambridge (UK)**, May 13, 2011
100. PDE seminar, **Trinity College of Dublin (Ireland)**, April 1, 2011
101. PDE seminar, **Max Planck Institute (Germany)**, Berlin, February 21, 2011
102. Seminar in Mathematical Physics, **FORTH/ICE-HT (Greece)**, Patras, January 26, 2011
103. PDE seminar, **University of Cambridge (UK)**, November 10, 2010
104. Seminar in Euclidean Geometry, **University of Birmingham (UK)**, April 12, 2010
105. Geometry seminar, **University of Patras (UK)**, September 10, 2009

Conference Participation

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

Synergestic Activities

1. Organizer of GR session in GR23 conference, July 2022
2. Co-organizer of CMS GR session, June 7–9 2021
3. Co-organizer of AMS workshop, March 20–21 2021
4. Co-organizer of "Advances in Computational Relativity" semester program at ICERM/Brown University, Fall 2020, Providence, Rhode Island, USA
5. Co-organizer of Summer School on Mathematical General Relativity and the Geometric Analysis of Waves of Fluids, June 11-22, 2018, MIT, USA
6. Co-organizer of 2016 LMS–CMI Summer School, July 4-8 2016, Reading University, UK
7. Graduate Committee Member, University of Toronto
8. Graduate Committee Member, Princeton University
9. Co-organizer of Princeton Analysis Seminar
10. Co-organizer of Geometry Festival Conference, April 8-10 2016, Princeton University

Teaching

Spring 2022	Introduction to Combinatorics, University of Toronto
Spring 2022	Introduction to Real Analysis, University of Toronto
Spring 2021	Topics in 3D computer graphics, University of Toronto
Spring 2021	Geometric Analysis and Relativity, University of Toronto
Spring 2020	Topics in 3D computer graphics, University of Toronto
Spring 2020	Geometric Analysis and Relativity, University of Toronto
Spring 2020	Introduction to Combinatorics, University of Toronto
Spring 2019	General Relativity (graduate course), University of Toronto
Spring 2019	Geometric Analysis and Relativity, University of Toronto
Spring 2019	Introduction to Combinatorics, University of Toronto
Spring 2018	General Relativity (graduate course), University of Toronto
Spring 2018	Introduction to Combinatorics, University of Toronto
Spring 2018	Calculus for Management II, University of Toronto
Spring 2017	*General Relativity* (graduate course), University of Toronto
Spring 2017	*Intoduction to Combinatorics*, University of Toronto
Spring 2016	*Analysis* MAT 215, Princeton University
Spring 2014	*Linear Algebra* MAT 202, Princeton University
Fall 2014	*Linear Algebra* MAT 202, Princeton University
Fall 2012	*General Relativity* (graduate course), Columbia University
Fall 2011	*Linear Analysis, Linear Algebra, Analysis II*, University of Cambridge
Spring 2010	*Geometry of Curved Spaces, Differential Geometry*, University of Cambridge
Fall 2010	*Hyperbolic Differential Equations*, CCA, University of Cambridge
Spring 2009	*Linear Analysis, Linear Algebra, Analysis II*, University of Cambridge
Fall 2009	*Linear Analysis, Linear Algebra, Analysis II*, University of Cambridge
Spring 2008	*Linear Analysis, Linear Algebra, Analysis II*, University of Cambridge

Undergraduate Supervision

2022	Jan Domalaon (University of Toronto)
2020	Salim Deaibes, Hussain Jasim (University of Toronto)
2019	Valerie Gilchrist, Ahmad Shanqiti (University of Toronto)
2018	Samantha Hergott (University of Toronto)
2017	Taylor Esch, Schinella D'Souza, Nikolai Meek (University of Toronto)
2017	Daerian Dilkumar, Vrund Vyas (University of Toronto)
2016	Efthymios Prappas (Princeton University)
2014	Jeffmin Lin (Princeton University)
2012	Laurent Cote (Princeton University)

Masters Supervision

2017	Eric Massoud (University of Toronto)
2017	Ahmed Ellithy (University of Toronto)
2018	Eva Politou (University of Toronto)
2018	Marios Apetroaie (University of Toronto)

Scholarships

Fall 2012	Visiting Scholar, Columbia University, New York
Fall 2012	General Relativity & Analysis at Princeton (GRAP) Scholar
2008–2012	Bodossaki Scholarship, University of Cambridge, UK
2006–2007	Vergiottis Scholarship, University of Cambridge, UK
2005-2007	Vardinogiannis Scholarship, University of Patras, Greece
2004-2006	IKY Scholarship, University of Patras, Greece

Journal Referee

Annals of Mathematics, Annals of PDEs, Duke Journal, ARMA, Communications in Mathematical Physics, Classical and Quantum Gravity, Annales Henri Poincaré, International Mathematical Research Notices, Journal of EMS, Letters in Mathematical Physics

Book Reviewer

Springer

Distinctions

1. Bronze medal (2003, 2004) in the International Mathematical Olympiad (IMO)
2. Bronze medal (2002, 2003) in the Balkan Mathematical Olympiad (BMO)
3. Bronze (2002), Silver (2003), Gold (2004) medal in the Mediterranean Mathematical Olympiad
4. Gold medal in the Junior Balkan Mathematical Olympiad, Cyprus 2002