Curriculum Vitae with Publications

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LYDIA BIERI

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Appointments

Since 2021	**Professor in Mathematics,** **University of Michigan, Dept. of Mathematics, Ann Arbor MI, USA.**
2019 - 2023	Director of the Michigan Center for Applied and Interdisciplinary Mathematics MCAIM), University of Michigan, Ann Arbor MI, USA.
2015 - 2021	Associate Professor in Mathematics University of Michigan, Dept. of Mathematics, Ann Arbor MI, USA.
2010 - 2015	Assistant Professor in Mathematics, UMICH, Dept. of Mathematics, Ann Arbor.
2007 - 2010	Harvard University, Dept. of Mathematics, Cambridge MA, USA, Benjamin Peirce Lecturer on Mathematics with the status of Assistant Professor.
2005 - 2007	Swiss National Funds Fellowship support.
2001 - 2007	Assistant at ETH Zurich, Switzerland, Dept. of Mathematics.

Education

ETH Zurich Advisor: Prof. Dr. Demetrios Christodoulou	Mathematics	Dr. sc. ETH Zürich (Ph.D.)	2007
ETH Zurich	Mathematics	Diploma (corresponds to M.A.)	2001
ETH Zurich	Mathematics	Pre-Diploma (corresponds to B.A.)	1998

Research Interests

General relativity, geometric analysis, geometry, analysis of (hyperbolic) partial differential equations and mathematical physics.

Grants

- **NSF Grant DMS-2204182. (Current)**

NSF. 2022-2027. Amount: $ 446'647. (No-cost extension from 2026 to 2027.) PI

- **NSF Grant DMS-1811819.**

NSF. 2018-2022. Amount: $ 211'500. (No-cost extension from 2021 to 2022.) PI

- **Simons Fellowship in Mathematics.**

Simons Foundation. 2018-2019. Amount: $ 106'962. (Award Number: 555809). PI

- **Associate Professor Funds.**

LSA. University of Michigan, Ann Arbor. 2017-2021. Amount: $ 29'251. PI

- **NSF CAREER Award DMS-1253149.**

NSF. 2013-2019. Amount: $ 410'000. (No-cost extension from 2018 to 2019.) PI

- **NSF Grant DMS-1551696.**

NSF. For the conference "Mathematical General Relativity" at the Tsinghua Sanya International Mathematics Forum (TSIMF) in Sanya, Hainan, China, January 2016. Travel support for US-based speakers and participants. Amount: $ 25'000. PI

- **NSF Grant DMS-0904583.**

NSF. 2009-2012. Amount: $ 136'480. (This grant was subcontracted from Harvard to UMICH, when I moved to Ann Arbor in 2010.) PI

- **NSF Grant 0904760.**

NSF. 2011-2013. Amount: $ 94,767.
PI 2011-2013: Lydia Bieri. (No-cost extension from 2012-2013.) (This grant was initially awarded for 2009-2012 to Zhou Zhang, and transferred to me in 2011.)
PI 2009-2011: Zhou Zhang.

- **MCubed Project UMICH.**

University of Michigan, Ann Arbor. 2015-2017. Amount: $ 15'000. Co-PI. Interdisciplinary project connecting mathematics, physics and philosophy.

Awards and Honors (Selection)

Since 2022		Fellow of the American Mathematical Society (AMS)
Since 2021		Fellow of the American Physical Society (APS)
2018 - 2019		Simons Fellowship in Mathematics.
2026		Chair of the APS DGRAV fellowship selection committee (DGRAV Division of Gravitational Physics).
2025		Member and vice chair of the APS DGRAV fellowship selection committee.
2026-2029		Member of the Fellows Program Selection Committee by the AMS.
2025-2027		Member of the Stefan Bergman Fellowship Selection Committee by the AMS.
2023-2025		Member of the Scientific Organizing Committee for the GR 24 Meeting in 2025. Organized every 3 years by the International Society on General Relativity and Gravitation.
2025	Mar.	Invited talk at the APS (American Physical Society) Joint Meeting, Global Physics Summit, Anaheim, California.
2024	June	Two invited talks hosted by the Institute for Pure and Applied Mathematics, IPAM, UCLA, at Lake Arrowhead (CA).
2024	Jan.	Invited talk at "Yvonne@100", online conference organized by The International Society on General Relativity and Gravitation to celebrate the 100th birthday of Yvonne Choquet-Bruhat and her contributions to general relativity, mathematics and physics.
2023	Oct.	Invited Address at the Fall 2023 Central Section Meeting of the AMS, Creighton University in Omaha, Nebraska.
2013 - 2019		NSF CAREER Award DMS-1253149. No-cost extension for one year.
2020	Jan.	Invited plenary talk at "1st Dutch Mathematical Relativity Day", Radboud University, Nijmegen NL.
2019	May	Invited plenary talk at "Conference on Differential Geometry, Calabi-Yau theory, and General Relativity: A conference in honor of the 70th Birthday of Shing-Tung Yau", Harvard University, Cambridge MA.

2019	Jan.	Invited plenary talk at "2019 MATH + X Symposium on Inverse Problems and Deep Learning in Space Exploration", Rice University, Houston, TX.
2017	Jan.	Invited plenary talk at the "Joint Mathematics Meetings" (JMM), Atlanta GA, "Current Events Bulletin" Session. (JMM organized by AMS and MAA.)
2017	Jan.	Invited talk at the APS (American Physical Society) Meeting, Washington D.C., in the session "Extremes of Gravity: From Weak to Strong."
2017		Articles solicited by the editors of the Notices of the AMS and the Bulletin of the AMS.
2016	May-Jun.	Invited stay at IHES (Institut des Hautes Etudes Scientifiques), Bures-sur-Yvette, France.
2016	Feb.-Apr.	Invited stay at Harvard University for the program "Nonlinear Equations" (CMSA).
2015	Oct.	Representing Mathematical GR in a plenary talk at "2015 Midwest Relativity Meeting and GR Centennial Anniversary Session", Northwestern University, Evanston IL.
2013	Fall	MSRI Berkeley CA, Research Membership. Program in Mathematical General Relativity.
2018	Mar.	Swiss newspaper "Luzerner Zeitung" published an interview with me about my research and life and a solicited article I wrote about gravitational waves.

For more data, please see below.

Publications

Submitted to the Journal (2026)

• (with D. Garfinkle, J. Isenberg, D. Maxwell, J. Wheeler) *"Asymptotically Euclidean Solutions of the Constraint Equations with Prescribed Asymptotics".* arXiv:2512.21274 (2025).

Published

• (2026) *"Stochastic Limit of Growing Gravitational Wave Memory from Sources in the Early Universe and Astrophysical Sources".* Phys. Rev. D 113. 064050 . DOI: https://doi.org/10.1103/j7qb-9jqx . Version on the arxiv: arXiv:2511.06548 (2025).

• (2025) (with D. Gafinkle and J. Wheeler) *"Brill Waves with Slow Fall-Off Towards Spatial Infinity."* Class. Quantum Grav. 42 115011. (2025).

• (2024) *"Radiation and Asymptotics for Spacetimes with Non-Isotropic Mass."* Pure and Applied Mathematics Quarterly (PAMQ). Vol. 20. Number 4. (2024).

• (2024) (with D. Garfinkle) *"An experiment to measure electromagnetic memory."* Classical and Quantum Gravity. Vol. 41. Number 22. (2024).

• (2024) (with A. Polnarev) *"Gravitational Wave Displacement and Velocity Memory Effects."* Classical and Quantum Gravity. Vol. 41. Number 13. (2024).

• (2023) *"The Cauchy Problem and Beyond."* Celebratio Mathematica. Volume in honor of Yvonne Choquet-Bruhat.

• (2022) *"New structures in gravitational radiation."* Advances in Theoretical and Mathematical Physics. **26**. 3. (2022). 531-594.

• (2021) *"New Effects in Gravitational Waves and Memory."* Phys. Rev. D 103. 024043. (2021).

• (2020) (with D. Garfinkle, S.-T. Yau) *"A No-Boundary Method for Numerical Relativity."* Classical and Quan-

tum Gravity. **37**. 4. (2020).

• (2019) (with P. Wagle, N. Yunes, D. Garfinkle) *"Hair loss in parity violating gravity."* Classical and Quantum Gravity. **36**. 11. (2019).

• (2018) *"Answering the Parity Question for Gravitational Wave Memory."* Phys. Rev. D 98. 124038. (2018).

• (2018) *"Black hole formation and stability: a mathematical investigation."* Bulletin (New Series) of the AMS (AMS: American Mathematical Society). Electronic publication Sept 2017. Printed publication 2018, vol. 55, no. 1.

• (2017) (with D. Garfinkle and N. Yunes) *"Gravitational Waves and Their Mathematics."* AMS Notices. (August Issue 2017) **64**. 7. (2017). (AMS: American Mathematical Society).

• (2017) (with D. Garfinkle and N. Yunes) *"Gravitational wave memory in ΛCDM cosmology."* Classical and Quantum Gravity. **34**. 21. (2017).

• (2017) (with P. Chruściel) *"Future-complete null hypersurfaces, interior gluings, and the Trautman-Bondi mass."* Harvard CMSA Series in Mathematics. Volume 1. Nonlinear Analysis in Geometry and Applied Mathematics. (2017).

• (2017) (with S. Miao, S. Shahshahani and S. Wu) *"On the motion of a self-gravitating incompressible fluid with free boundary."* Communications in Mathematical Physics. **355**. 1. (2017). 161-243.

• (2017) (with S. Miao and S. Shahshahani) *"Asymptotic properties of solutions of the Maxwell Klein Gordon equation with small data."* Communications in Analysis and Geometry. **25**.1. (2017). 25-96.

• (2016) (with D. Garfinkle and S.-T. Yau) *"Gravitational wave memory in de Sitter spacetime."* Phys. Rev. D 94. no.6. (2016) 064040

• (2015) (with D. Garfinkle and S.-T. Yau) *"Gravitational waves and their memory in general relativity."* Surveys in Differential Geometry. Volume 20. One hundred years of general relativity. A jubilee volume on general relativity and mathematics. (Published 2015).

• (2014) (with D. Garfinkle) *"Neutrino Radiation Showing a Christodoulou Memory Effect in General Relativity."* Annales Henri Poincaré. 23. 14. 329. (2014). (DOI 10.1007/s00023-014-0329-1).

• (2014) (with D. Garfinkle) *"Perturbative and gauge invariant treatment of gravitational wave memory."* Phys. Rev. D. 89. 084039. (2014).

• (2014) (with A. Tolish, D. Garfinkle, R. Wald) *Examination of a simple example of gravitational wave memory.* Phys. Rev. D 90. 044060. (2014).

• (2013) (with D. Garfinkle) *"An electromagnetic analog of gravitational wave memory."* Class. Quantum Grav. 30. 19. (2013) 195009.

• (2012) (with P. Chen and S.-T. Yau) *"The Electromagnetic Christodoulou Memory Effect and its Application to Neutron Star Binary Mergers".* Class.Quantum Grav. 29, 21, (2012). This article was selected by the Editorial Board of CQG to be one of the **highlights** of 2012-2013.

• (2011) (with P. Chen and S.-T. Yau) *"Null Asymptotics of Solutions of the Einstein-Maxwell Equations in General Relativity and Gravitational Radiation".* Advances in Theoretical and Mathematical Physics, 15, 4, (2011).

• (2011) (with H. Nussbaumer) *"Who discovered the expanding universe?"* The Observatory. A Review of Astronomy. **131**. no. 1225. (2011). 394-398. Updated version (2012): http://arxiv.org/pdf/1107.2281v2

• (2010) *"An Extension of the Stability Theorem of the Minkowski Space in General Relativity."* Journal of Differential Geometry. **86**. no.1. (2010). 17-70.

• (2010) (with H. Nussbaumer) 2nd Print of *"Discovering the Expanding Universe".* Book for a broader public. Cambridge University Press, Cambridge, UK. (2010). ISBN 978-0-521-51484-2.

• (2009) *"Extensions of the Stability Theorem of the Minkowski Space in General Relativity. Solutions of the Einstein Vacuum Equations."* Research monograph (approximately 300 pages). Studies in Advanced Mathematics. AMS/IP (American Mathematical Society / International Press). Cambridge. MA. (2009). ISBN 978-0-8218-4823-4. Published in one book together with Nina Zipser's monograph.

• (2009) (with H. Nussbaumer) "Discovering the Expanding Universe". Book for a broader public. Cambridge University Press, Cambridge, UK. (2009). ISBN 978-0-521-51484-2.

• (2007) "An Extension of the Stability Theorem of the Minkowski Space in General Relativity." Ph.D.thesis. ETH Zürich. No. 17178. (2007).

Preprints (2025-2026)

• (with N. Patel, C. Stith) *"Black hole formation with null dust".* Prove closed trapped surface (and black hole) formation for the Einstein equations coupled to null dust. This proof is roughly 200 pages long and includes new results in geometric analysis and general relativity theory.

• (with Z. An) *"Null Limits and Antipodal (Non-)Symmetries of Dynamical Spacetimes".*

• (with A. Polnarev) *"Unified Treatment of Gravitational Wave Memory".*

• *"From initial data to null infinity."* Investigate open sets of solutions to the Einstein equations coupled to various other PDE. The goal is to fully understand evolution properties and gravitational radiation for large classes of spacetimes.

Other Publications:

• (2021) Contribution to "Selected Works of Robert A. Bartnik", Int. Press of Boston.

• (2020) Book Review of "A Lady Mathematician in this Strange Universe: Memoirs" by Yvonne Choquet-Bruhat. AMS Notices. **67**. 3. (2020).

• (2018) (with G. Carcassi, C.A. Aidala, D. J. Baker) "From physical assumptions to classical and quantum Hamiltonian and Lagrangian particle mechanics". J. Phys. Commun. **2**. 4. (2018).

• (During the last few years.) Several articles for the public, among them an article about gravitational waves and their mathematics in a daily newspaper in Switzerland.

Books Edited

• (2024) Co-editor for research volume in mathematical general relativity to honor Demetrios Christodoulou's work. Pure and Applied Mathematics Quarterly (PAMQ). (Published 2024).

• (2017) Book published, I was serving as a co-editor with S.-T. Yau and P. Chruściel. Research articles (peer-reviewed) on mathematical general relativity. *"Harvard CMSA Series in Mathematics."* Volume 1. Nonlinear Analysis in Geometry and Applied Mathematics. (2017).

• (2015) Book published, I was serving as an editor, co-editing with S.-T. Yau the jubilee volume on general relativity and mathematics. "Surveys in Differential Geometry." Volume 20. One hundred years of general relativity. (Published August 2015.) Research survey articles by leading experts in the field of mathematical general relativity.

Articles Edited

• (2026, ongoing) Co-editor for memorial article in the AMS Notices for Yvonne Choquet-Bruhat.

In Preparation (2026) - Research in Progress:

• *"Einstein equations coupled to fluids and their gravitational waves."* Investigate mathematical structures that can

be seen in gravitational waves.

- *"Investigate the memory effect in various physical theories."*

- *"Interactions of gravitational waves".*

- *"Investigate the interior of black holes."* With D. Garfinkle, S.-T. Yau. Using our new geometric setup for an algorithm to solve the Einstein equations.

- *"Investigating cosmological models."* Solo and collaborative projects.

- *"Global geometry of spacetimes in higher dimensions".* Various projects with several co-authors. Study the global geometry of asymptotically flat spacetimes in higher dimensions satisfying the Einstein equations.

- *"Investigating the Einstein equations and gravitational radiation as well as black holes in general relativity."* Solo projects and collaborations with co-authors in various combinations. They include: Investigations of solutions of the Einstein equations in various scenarios and coupled to several physical fields, spacetimes with non-isotropic mass, finer structures in asymptotically-flat spacetimes of slow decay.

Talks, Conferences, Seminars, Invited, until April 15, 2026

2026	Apr.	Colloquium at the Fields Institute, Toronto, Canada.
2025	Sept.-Oct.	Give mini-course at the program "Geometry and Convergence in Mathematical General Relativity" at the Simons Center for Geometry and Physics, Stony Brook University (NY). (Invited).
	July	(Member of the Scientific Organizing Committee) GR 24 Meeting, Glasgow, (GB).
	July	Invited talk at the Simons Celestial Holography Collaboration workshop at the University of Oxford (GB).
	May	Workshop "Geometry, Analysis, and Physics in Lorentzian Signature", (online) Granada (Spain).
	Mar.	Invited talk at the APS (American Physical Society) Joint Meeting, Global Physics Summit, Anaheim, California.
	Feb.	Astrophysics-Relativity-Cosmology Seminar at the University of Illinois at Urbana-Champaign (IL).
2024	Oct.	Talk at the London-Oldenburg Relativity seminar (online), co-organized by the University College London (GB) and the University of Oldenburg (Germany).
	June	Two invited talks hosted by: Institute for Pure and Applied Mathematics, IPAM, UCLA; program and workshops at Lake Arrowhead (CA), one talk in program "Mathematical and Computational Challenges in the Era of Gravitational Wave Astronomy", one talk for three joint programs in broader areas.
	Apr.	Invited talk at program and workshop in "Quantum and classical fields interacting with geometry", at IHP Paris (France).
	Feb.	(Online) Conference "Predictability in General Relativity: a conference in honor of Prof. Yvonne Choquet-Bruhat", organized by the Indian Association for General Relativity and Gravitation.
	Feb.	PDE Seminar, Dept. Mathematics, Penn State University, State College PA.
	Jan.	Talk at "Yvonne@100", online conference organized by The International Society on General Relativity and Gravitation to celebrate the 100th birthday of Yvonne Choquet-Bruhat and her contributions to general relativity, mathematics and physics.
2023	Nov.	Midwest Relativity Meeting, University of Chicago, Chicago.
	Oct.	"Cretan Waves", workshop in geometric hyperbolic PDE, University of Crete, Heraklion, Crete, Greece.
	Oct.	Invited Address at the Fall 2023 Central Section Meeting of the AMS, Creighton University in Omaha, Nebraska.
	Sept.	Physics Colloquium, Oakland University, Rochester MI.
	June	Invited talk at the workshop "Gravitational Memory Effects: from theory to observation", Queen Mary University of London, GB.
	May	Seminar talk at ETH Zurich, Switzerland.
	Apr.	General Relativity and Geometric Analysis Seminar, Columbia University, New York City.
2022	Nov.	Talk in Applied Mathematics Seminar at Yale University, New Haven CT.
	Nov.	"Northeast Workshop in Geometric Analysis", University of Connecticut, Storrs CT.
	Oct.	Midwest Relativity Meeting, Oakland University, Rochester MI.
	June	Talk in the Seminar of the Edinburgh Mathematical Physics Group

		hosted by the Maxwell Institute of Mathematical Sciences, Edinburgh, GB.
	Apr.	"Ohio River Analysis Meeting", University of Kentucky, Lexington KY.
	Apr.	Conference in General Relativity at Harvard University, CMSA, Cambridge MA.
	Apr.	Workshop "At the Interface of Mathematical Relativity and Astrophysics", Banff, Canada.
2021	Oct.	Workshop "Mathematical and Numerical Aspects of Gravitation", IPAM, UCLA, CA.
	Oct.	Conference on gravitation in honor of Thibault Damour, IHES (Institut des Hautes Etudes Scientifiques), Bures-sur-Yvette, France.
	Oct.	Mathematical Physics Seminar (online), Ariel University, Israel.
	Aug.-Sept.	Workshop "Mathematical Aspects of General Relativity" (online), Oberwolfach. Germany.
	June	"5th Great Lakes Mathematical Physics Meeting" (online), Michigan State University, East Lansing MI.
	May	Colloquium at Harvard University (online), CMSA, Department of Mathematics.
	Apr.	APS (American Physical Society) Meeting (online), invited talk.
	Mar.	Talk at the Princeton Gravity Initiative (online), Princeton University, Princeton, NJ.
2020	Dec.	(Online) Joint online Mathematical Relativity Colloquium, International colloquium joint by Sorbonne U. (Paris, France), U. of Tuebingen (Germany), U. of Potsdam (Germany), Uppsala U. (Sweden), Radboud U. (Netherlands), U. of Lisbon (Portugal).
	Dec.	(Online) 2020 Nobel Symposium, talk on 2020 Nobel Prize in Physics, UMICH.
	May	(Online) Colloquium at Harvard University, CMSA.
	May	(Online) CMSA Lecture Series in Mathematical Science Literature, Harvard University, Cambridge MA.
	Feb.	Colloquium at the Black Hole Initiative, Harvard University, Cambridge MA.
	Jan.	Plenary speaker at the "1st Dutch Mathematical Relativity Day", Radboud University, Nijmegen, Netherlands.
	Jan.	Conference "Physics@Veldhoven", Veldhoven, Netherlands.
2019	Jul.	Plenary speaker at the conference "Nonlinear PDEs and Applications" in the memory of Joel Smoller, University of Michigan, Ann Arbor, MI.
	May	Plenary speaker at "Conference on Differential Geometry, Calabi-Yau theory and General Relativity: A conference in honor of the 70th Birthday of Shing-Tung Yau", Harvard University.
	Apr. - May	Series of lectures at Harvard University, Department of Mathematics and CMSA, Cambridge MA.
	Mar	College of Charleston, seminar talk and colloquium, Dept. of Mathematics, Charleston SC.
	Feb.-Mar.	Series of lectures at Columbia University, Department of Mathematics, New York City.
	Feb.	Colloquium in Mathematics at Ohio State University, Columbus, OH.
	Jan.	"2019 MATH + X Symposium on Inverse Problems and Deep Learning in Space Exploration", Rice University, Houston, TX.
2018	Oct.	Conference "Stability Phenomena in Geometry and Mathematical Physics", Humboldt University, Berlin, Germany.
	Sept. - Nov.	Series of lectures at the Department of Mathematics at EPFL (Swiss Federal Institute of Technology Lausanne) in Lausanne, Switzerland.
	Aug.	Workshop "Mathematical General Relativity", Oberwolfach, Germany.
	June	"17th International Conference on Hyperbolic Problems: Theory, Numerics, Applications", State College, PA.
	May	Workshop "Infrared Physics: Asymptotic & BMS symmetry, soft theorems, memory, information paradox and all that", International Solvay Institutes, Brussels, Belgium.
	May	Conference "Black Hole Initiative", Harvard University, Cambridge MA.
	Apr.	Colloquium at Black Hole Initiative, Harvard University, Cambridge MA.
	Apr.	AMS sectional meeting, Boston MA.
	Mar	Workshop "Field equations on Lorentzian space-times", Hamburg, Germany.
	Jan.	Colloquium, UMICH, Department of Mathematics, Ann Arbor MI.
2017	Aug.-Sept.	Workshop "Advances in General Relativity", Erwin Schrödinger Institute (ESI), Vienna, Austria.
	Jul.	Conference "Mathematics, Physics, and their Interaction", ETH Zurich, Switzerland.
	May	Conference "Black Hole Initiative", Harvard University, Cambridge MA.
	Jan.	APS (American Physical Society) Meeting, Washington D.C., invited talk in the session "Extremes of Gravity: From Weak to Strong."
	Jan.	Joint Mathematics Meetings (JMM), Atlanta GA, invited plenary talk in the "Current Events Bulletin" Session. (JMM organized by AMS and MAA.)
2016	Dec.	2016 CMS (Canadian Mathematical Society) Winter Meeting, Niagara Falls, Canada,

		invited talk in the session "Geometric PDEs, the Einstein equation, and mathematical relativity."
	Oct.	Colloquium, Dept. Mathematics, Vanderbilt University, Nashville TN.
	May - Jun.	Invited stay at IHES (Institut des Hautes Etudes Scientifiques), Bures-sur-Yvette, France.
	May	Plenary talk at "Nonlinear Waves" Conference, IHES, Bures-sur-Yvette, France.
	Feb. -Apr.	Invited stay at Harvard University, Center of Mathematical Sciences and Applications, for the program "Nonlinear Equations", Cambridge MA.
	Apr.	Talk in PDE/Analysis seminar, Dept. Mathematics, MIT, Cambridge MA.
	Apr.	Plenary talk at conference "Nonlinear Equations" at Harvard, CMSA, Cambridge MA.
	Mar.	Colloquium at Harvard University, CMSA.
	Mar.	Special talk in student seminar at Harvard University, Math. Dept.
	Feb.	Plenary talk at "Workshop on Analysis, Geometry and Mathematical Relativity", at Monash University, Vic, Australia.
	Feb.	Differential Geometry Seminar, Math. Dept., Harvard University.
	Feb.	Evolution Equations Seminar, CMSA, Harvard University.
2016	Jan. -	Organizer. At Tsinghua Sanya International Mathematics Forum (TSIMF) in Sanya in Hainan, China. Co-organized Conference in Mathematical General Relativity
2015	Dec.	and Gravitational Waves at TSIMF. 100 Years of General Relativity.
	Nov.	Midwest PDE Conference at Michigan State University, East Lansing MI.
	Oct.	Junior colloquium for beginning PhD students in Mathematics at UMICH Ann Arbor.
	Oct.	Plenary talk representing Mathematical GR at "2015 Midwest Relativity Meeting and GR Centennial Anniversary Session", Northwestern University, Evanston IL.
	Sept.	Public talk at UMICH Ann Arbor at my exhibit "The Shape of the Universe".
	Jun.	Plenary talk at conference "Shock waves and beyond" at IHP in Paris.
	Jun.	Seminar in Mathematical General Relativity at University Paris 6 (LJLL) and IHP at Jussieu, Paris.
	Jun.	Conference "General Relativity and Gravitation, A Centennial Perspective" at Penn State University, University Park PA.
	May	Fields Institute, Toronto, Plenary talk at thematic program on the centenary of the Einstein equations.
	Mar.	Plenary Talk at the "Smoky Great Plains Geometry Conference" at Wichita State Univ. KS.
	Feb.	Public talk at UMICH Ann Arbor in the series "Saturday Morning Physics". Recorded for TV.
	Jan.	High Energy Theory Seminar, Physics Dept., UMICH Ann Arbor.
2014	Dec.	General Relativity Seminar, Simons Center for Geometry and Physics, Stony Brook, NY.
	Nov.	Conference "Midwest Relativity Meeting" at Oakland University in Rochester, MI.
	Oct.	Analysis Seminar at EPFL in Lausanne, Switzerland.
	May	Workshop "The Pacific Northwest Geometry Seminar", Univ. Oregon, Eugene OR. Plenary talk.
	Feb.	Public talk at the "Science Cafe: Black Holes, Gravity and Cosmic Geometry", Ann Arbor, MI.
	Jan.	Workshop "Foundations of General Relativity", plenary talk, UMICH Ann Arbor, MI.
2013	Dec.	Differential Equations Seminar, Dept. Mathematics, UMICH Ann Arbor, MI.
	Oct.	Dept. Mathematics, Brown University, Providence RI.
	Sept.	MSRI Berkeley Workshop on Math. General Relativity, Plenary Speaker. (2 Talks.)
	Sept.	Stay at MSRI Berkeley CA as an invited research member. For Math. General Relativity program.
	Jun./Jul.	"IAS/Park City Mathematics Summer Session 2013 Research Program", Research Topic: Geometric Analysis. Utah.
	Apr.	Differential Geometry Seminar, Harvard Univ., Cambridge.
	Apr.	"Great Lakes Geometry Conference", Plenary Speaker, Northwestern Univ., Evanston IL
	Feb.	Analysis/PDE Seminar, Univ. North Carolina, Chapel Hill.
2012	Fall	Several talks for different audiences, Dept. Mathematics, UMICH, Ann Arbor, MI.

	Jul./Aug.	Workshop "Mathematical Aspects of General Relativity",
		Oberwolfach, Germany.
	May 12	Holding Course "General Relativity and the Nonlinear Memory Effect
	- Jun. 9	of Gravitational Waves", Tsinghua University. Math.Sci.Center,Beijing,China.
	May	"Southern California Analysis and PDE Conference", UCSD, CA.
	Jan.	Talk in the "What is ... " Seminar. Department of Mathematics,
		University of Michigan, Ann Arbor, MI.
2011	Nov.	Colloquium, Physics Department,
		University of Michigan, Ann Arbor, MI.
	Sep.	Workshop at ICERM institute, Brown University.
	Jun.	Workshop on Nonlinear Dispersive Equations, ETH Zurich.
	May	Barrett Lectures in Mathematical Relativity, Invited Plenary Lecture,
		University of Tennessee, Knoxville, TN.
	Apr.	Dept. Mathematics, Courant Institute, NYU, New York City, NY.
	Apr.	Dept. Mathematics, Columbia University, New York City, NY.
	Apr.	Faculty Portraits, Department of Mathematics, UMICH.
	Mar.	Seminar in Mathematical Physics, ETH Zurich, Switzerland.
	Feb.	Colloquium, Astrophysics Department,
		University of Michigan, Ann Arbor, MI.
	Jan.	General Relativity Seminar, IHP, Paris, France.
2010	Dec.	Differential Geometry Seminar, Mathematics Department,
		Harvard University, Cambridge, MA.
	Jun.	BIRS Workshop "Geometric Analysis and General Relativity", Banff, Canada.
	Apr.	Department of Mathematics, University of Oregon, Eugene, OR.
		Institute of Theoretical Science, University of Oregon, Eugene, OR.
	Jan.	Two talks at the Department of Mathematics,
		Rutgers University, New Brunswick / Piscataway, NJ.
		Department of Mathematics, Northeastern University, Boston, MA.
2009	Nov.	Geometry Topology Seminar, Brown University, Providence RI.
	Nov.	AMS Meeting, Special Session on General Relativity and Related PDE's,
	Oct.	Boca Raton, FL.
	Oct.	AMS Meeting, Special Session on N-Body Problems in Relativity,
		Penn. State University (Univ. Park). PA.
		Two talks at the Department of Mathematics, Univ. of Michigan, Ann Arbor, MI.
		Workshop "Mathematical Aspects of General Relativity",
		Oberwolfach. Germany.
	Jul.	Marcel Grossmann Meeting on GR, Paris.
	Jun.	Seminar talk, University of Bonn and Hausdorff Center, Germany.
	May	Analysis Seminar, Princeton University, Princeton, NJ.
	Apr.	Differential Geometry Seminar, CUNY, New York City.
		Faculty Colloquium, Harvard University, Cambridge.
	Feb.	Geometry Seminar, Stanford University, Stanford, CA.
2008	Jan.-Dec.	Several talks in research seminars and study groups at Harvard and MIT.
	Nov.	Analysis Seminar, University of Pennsylvania, Philadelphia, PA.
	Oct.	Differential Equations Seminar, University of Michigan, Ann Arbor, MI.
	Mar.	Geometry and Analysis Seminar, Columbia University, New York City.
2007	Dec.	PDE/Analysis Seminar, MIT, Cambridge.
		Analysis Seminar, Courant Institute, NYU, New York City.
	Nov.	Differential Geometry Seminar, Harvard University, Cambridge.
		Gauge Theory and Topology Seminar, Harvard University, Cambridge.
	Oct.	GR and Geometric Analysis Seminar, MIT, Cambridge.
	Sept.	GR and Geometric Analysis Seminar, MIT, Cambridge.
	Jul.	Int. Congress on Industrial and Applied Mathematics, Zurich.
		Int. Conference on GR and Gravitation, Sydney.
		Series of talks, Dept. Mathematics. Monash University, Melbourne.
	Jun.	Series of talks, Dept. Mathematics. Monash University, Melbourne.
	Feb.	Analysis Seminar, Max Planck Institute for Gravitational Physics,
		Albert Einstein Institute, Golm (near Berlin).
2006	Nov.	Workshop: "From Geometry to Numerics", IHP Paris.

	Oct.	"Autumn Meeting in Mathematical Physics 2006", ETH Zurich.
		Workshop: "Global Problems in Mathematical Relativity II",
		Cambridge University (GB), Isaac Newton Inst. for Math. Sciences.
	Aug.	Int. Conference on Global Differential Geometry,
		Westfälische Wilhelms-Universität Münster, Germany.
	Jul.	Marcel Grossmann Meeting on GR, Freie Universität, Berlin.

Some Planned Conferences, Workshops and Talks

2026	June	XII International Meeting on Lorentzian Geometry, IST, University of Lisbon, Portugal,
	July	Kamke Colloquium, University of Tübingen, Tübingen, Germany,

Many Talks to Students and to the Public

Organization of Conferences, Workshops and Colloquia

2025-2026		Member of the Scientific Committee of the XII International Meeting on Lorentzian Geometry, IST, University of Lisbon, Portugal, to be held in June 2026.
2023-2025		Member of the Scientific Organizing Committee for the GR 24 Meeting held in July 2025 in Glasgow, GB. These GR meetings are organized every 3 years by the International Society on General Relativity and Gravitation.
2025		Co-Organizer, (Since Summer 2010): "Differential Equations Seminar", Dept. Mathematics, UMICH Ann Arbor MI.
2025	May	Small workshop in Mathematics, Physics and General Relativity, at UMICH, Chicago Meets A2 Relativity Event, with special efforts to support graduate students.
2024	Nov.	Co-Organizer for "Midwest Relativity Meeting", University of Michigan, Ann Arbor MI. Yearly, rotating meeting in the Midwest bringing together mathematicians and physicists.

2020-2023
Organizer (and founder) of "MCAIM Colloquium", Dept. Mathematics, UMICH Ann Arbor MI.

Spring 2022
Co-Organizer for "General Relativity Program" at Harvard University, CMSA, Cambridge, MA.

October 2021
Co-Organizer for workshop "Mathematical and Numerical Aspects of Gravitation", IPAM, UCLA, CA.

July 2019
Co-Organizer for "Conference in Nonlinear Partial Differential Equations and Applications", a conference in the memory of Joel Smoller, UMICH, Ann Arbor MI.

June 2019
Co-Organizer of a BIRS-CMO workshop in Oaxaca, Mexico.

Oct. 2017
Co-Organizer for "Midwest Relativity Meeting", University of Michigan, Ann Arbor MI.

Jul. 2017
Co-Organizer for Conference "Mathematics, Physics, and their Interaction", in Honor of Demetrios Christodoulou's 65th Birthday. ETH Zurich, Switzerland.

Spring 2016
Organizer "General Relativity Seminar" at Harvard University, CMSA, Cambridge MA.

Jan. 2016
(Lead Organizer) "Conference in Mathematical General Relativity and Gravitational Waves" at Tsinghua Sanya International Mathematics Forum (TSIMF) in Sanya, Hainan, China.
100 Years of General Relativity.
I obtained the NSF grant DMS-1551696 to support travels of US-based speakers and participants.

Since Summer 2010
"Differential Equations Seminar",
(co-organizer) Dept. Mathematics, UMICH Ann Arbor MI. (Current)

Sep. 2013
(Lead Organizer) for a subprogram of the program "Mathematical General Relativity", MSRI, Berkeley, CA.

May 2013
(Co-organizer) "Midwest PDE Seminar" , University of Michigan, Ann Arbor, MI.

Fall 2009, Spring 2010
"Brandeis-Harvard-MIT-Northeastern Joint Mathematics Colloquium"
(co-organizer) Harvard University, Cambridge.
2009 May "Workshop in String Theory, General Relativity and Partial Differential Equations"
(co-organizer), Harvard University, Cambridge.

Editorial and Reviewing Work

Member of the Editorial Board for
Journal of Nonlinear Science,
AMS (American Mathematical Society) Collected Works Series,

Editor-in-Chief for
Advances in Theoretical and Mathematical Physics (ATMP).

Member of the Editorial Advisory Board for
Journal of Mathematical Physics.

Co-Editor for
Research volume in mathematical general relativity to honor Demetrios Christodoulou's work. Published 2024. Pure and Applied Mathematics Quarterly (PAMQ). (Published 2024).

Co-Editor for
"Proceedings of the Harvard CMSA". Published 2017. (See above). Research articles (peer-reviewed) on mathematical general relativity.

Co-Editor for
"Surveys in Differential Geometry." Volume 20. One hundred years of general relativity. (Published August 2015.) Research survey articles (peer-reviewed) by leading experts in the field of mathematical general relativity. More information on the following website: http://intlpress.com/site/pub/pages/books/items/00000447/index.html

Co-Editor for memorial article in the AMS Notices for Yvonne Choquet-Bruhat. (2026, ongoing).

Reviewing for
various scientific journals and book series in mathematics and physics.

Teaching

(Note: Sabbatical from 1st September 2018 until 31st August 2019, and during fall 2023.)

Courses taught at UMICH Ann Arbor, Dept. of Mathematics:

• **Fall 2010: Math 256** - Applied Honors Calculus IV: Differential Equations. Taught 2 Sections.
• **Fall 2011 and Fall 2012: Math 454** - Boundary Value Problems for Partial Differential Equations.
2 Sections Each.
• **Winter 2013: Math 657** - Nonlinear Partial Differential Equations. Graduate course on
"The Mathematics of General Relativity Theory".
• **Winter 2014: Math 286** - Honors Differential Equations. 2 Sections.
• **Fall 2014: Math 756** - Advanced Topics in Partial Differential Equations. Graduate course.
• **Winter 2015: Math 635** - Differential Geometry. Graduate course.
• **Fall 2015: Math 602** - Real Analysis II: Functional Analysis. Graduate course.
• **Fall 2015: Math 217** - Linear Algebra.
• **Fall 2016: Math 454** - Boundary Value Problems for Partial Differential Equations. 2 Sections.
• **Winter 2017: Math 657** - Nonlinear Partial Differential Equations. Graduate Course.
• **Fall 2017: Math 656** - Introduction to Partial Differential Equations. Graduate Course.
• **Winter 2018: Math 657** - Nonlinear Partial Differential Equations. Graduate Course.
• **Fall 2019: Math 454** - Boundary Value Problems for Partial Differential Equations. 2 Sections.
• **Fall 2020: Math 656** - Introduction to Partial Differential Equations. Graduate Course.
• **Fall 2020: Math 700** - Directed Reading and Research on Black Hole Formation.

• **Winter 2021: Math 657** - Nonlinear Partial Differential Equations. Graduate Course.
• **Winter 2021: Math 700** - Directed Reading and Research on Black Hole Formation.
• **Fall 2021: Math 602** - Real Analysis II: Functional Analysis. Graduate Course.
• **Winter 2022: Math 635** - Differential Geometry. Graduate course.
• **Fall 2022: Math 709** - Topics in Analysis. Graduate course on "The Mathematics of General Relativity Theory".
• **Winter 2023: Math 635** - Differential Geometry. Graduate course.
• **Winter 2024: Math 636** - Differential Geometry. Graduate course on "The Mathematics of General Relativity Theory".
• **Fall 2024: Math 556** - Applied Functional Analysis. Graduate course.
• **Winter 2025: Math 451** - Advanced Calculus I. 2 Sections.
• **Fall 2025: Math 556** - Applied Functional Analysis. Graduate course.
• **Winter 2026: Math 451** - Advanced Calculus I. 2 Sections.

Participated in several **Teaching Academy** events.

Courses taught at Harvard, Dept. of Mathematics, Fall 2007 - Spring 2010:

• Linear Algebra and Applications (Math 121)	Fall 2007
• Introduction to the Mathematics of	Spring 2008
General Relativity (Math 271, Graduate Course)	
• Calculus (Math 1b)	Spring 2008
• Honors Linear Algebra and Real Analysis I and II	Fall 2008 - Spring 2009
(Math 25 a and b). This is a 2-semester course.	
• Differential Geometry (Math 230a, Graduate Course)	Fall 2009
• Differential Geometry (Math 136)	Fall 2009
• Topology II: Smooth Manifolds (Math 132)	Spring 2010

Harvard Teaching Award: Certificate of Distinction in Teaching from Derek Bok Center, Harvard University. For my Teaching, Spring 2010.

Service and Synergistic Activities

(Note: Sabbatical from 1st September 2018 until 31st August 2019 and fall 2023.)

• Director of the Michigan Center for Applied and Interdisciplinary Mathematics (MCAIM) at the University of Michigan (UMICH), Ann Arbor. 2019-2023.
• **Committee Work in the Department of Mathematics, UMICH, Ann Arbor:**
Serving on the Personnel Committee: 2024-2026.
Serving on the Long Range Planning Committee. 2025-2030.
Serving on the Development Committee: 2024-2025.
Serving on the QR Exams Committee: 2025-2026.
Serving on the AIM Graduate Admissions and Fellowships Committee. Winter 2024.
Serving on the Personnel Committee. 2015-2018, 2019-2021.
Serving on the Long Range Planning Committee. 2017-2022.
Serving on the Executive Committee. Fall 2021 - Fall 2023. Fall 2011 - Fall 2012.
Language exams (French) for graduate students. 2012-2018.
Serving on the Graduate Admissions and Fellowships Committee. 2012-2015.
• **Committee Work at the University of Michigan, Ann Arbor:**
Serving on the Schmidt AI Advisory Committee. 2022-2023.
• **Member of the Advisory Board of the Center of Mathematical Sciences and Applications (CMSA) at Harvard University. Since June 2025.**
• Assistant Director of Graduate Studies , Harvard Mathematics Department, Fall 2009, Spring 2010.
• Committee Work at Harvard during 2007-2010:
Graduate admissions committee
Qualifying exams (for graduate students)
Language exams (German) for graduate students.
Junior advising (two-on-one).
• **Chair of the APS DGRAV fellowship selection committee in 2026 (DGRAV Division of Gravitational Physics).**
• **Member and vice chair of the APS DGRAV fellowship selection committee in 2025 (DGRAV Division of Gravitational Physics).**

• **Member of the Fellows Program Selection Committee by the AMS. 2026-2029.**
• **Member of the Stefan Bergman Fellowship Selection Committee by the AMS. 2025-2027.**
• **Fellow of the American Physical Society.**
• **Fellow of the American Mathematical Society.**
• **Member of the American Mathematical Society.**
• **Member of the American Physical Society.**
• **Member of the International Society on General Relativity & Gravitation.**
• **Mentoring and advising** postdocs and students.
• At the conferences organized (see above), we made special efforts to invite PhD students and recent PhDs, to the conference to enable contacts and exchange with leading experts in the field.
• Many of the afore-mentioned conferences have also an important interdisciplinary component. In addition to mathematicians working in mathematical general relativity, scientists doing numerical simulations and observations (LIGO for instance) participated at the conferences as well. Interdisciplinary exchange was facilitated. Some of these workshops were organized to explicitly bring together researchers from mathematics, physics and astrophysics to foster and inaugurate collaborations and scientific exchange.
• NSF CAREER educational component involved student works, teaching improvements at high schools, public projects involving a broad cross-section of society. New activities for teaching mathematics at high schools were developed and implemented with various high school classes.
• NSF CAREER educational component: Exhibit "The Shape of the Universe" with 3D planetarium show in collaboration with the UMICH Museum of Natural History, students and high schools. Spring 2015 - spring 2016. It highlighted connections between mathematics, in particular geometry, with the laws of the Universe. Concepts of different geometries, curvature of space, the bending of light and gravitational waves were explained and taught in interactive components.
• With **MCAIM** we dramatically expanded the Center's footprint in the Department of Mathematics from a small number of committed faculty members working in traditional applied mathematics to a broad coalition with no constraints on specific research areas.
• With **MCAIM** we initiated and fostered research and education in mathematics and interdisciplinary areas. The Center serves as a focal point integrating mathematics with the sciences and engineering across the University and worldwide. MCAIM supports its mission by organizing international topical workshops to initiate and foster interdisciplinary research and by hosting a short-term visitors program. It manages the Van Loo Postdoctoral Fellowship program and holds advanced summer schools for graduate students and postdoctoral fellows. The Center also promotes mathematical research at Michigan by other means, such as by aiding searches for external funding and facilitating collaborative interactions. We initiated partnerships and collaborations with various other universities.
• Book review for translation into English of Yvonne Choquet-Bruhat's memoirs, appeared in AMS Notices in March 2020. Choquet-Bruhat is one of the most accomplished mathematicians and physicists in general relativity. Her life and work have inspired many.
• Wrote a public solicited article about gravitational waves. This article and an interview with me about my research and life was published in the Swiss newspaper "Luzerner Zeitung" in March 2018.
• Several public events, lectures and activities for students, including a public talk at UMICH Ann Arbor in the series "Saturday Morning Physics". Recorded for TV (2015).
• Several talks and events for undergraduate and graduate students, including talks for graduate students in the department of mathematics and in the department of physics.
• Organized and participated in various workshops and panels for undergraduates, graduates and postdocs, at UM and other universities.
• Organized and participated in reading seminars mainly for grad students and postdocs.
• Served on various research panels and NSF panels.
• MSRI Berkeley CA, Research Membership, fall 2013. Program in Mathematical General Relativity.
• UM MCubed project, interdisciplinary, including mathematics, physics, philosophy. Students participated.
• Book with H. Nussbaumer for broader public, see above.
• Co-authoring with D. Christodoulou a graduate textbook for new results in mathematical general relativity. (In preparation).
• Co-authoring with D. Garfinkle an invited article on memory effects. (In preparation).
• **Sabbatical** stays at EPFL (fall 2018), Columbia University (winter 2019) and Harvard University (spring 2019).

Miscellaneous

Languages: Fluent in English, French, German, Swiss German.
Knowledge of Italian, Spanish.