

Grigorios Fournodavlos

CONTACT INFORMATION

Laboratoire Jacques-Louis Lions, Sorbonne Université,
4 place Jussieu, 75005 Paris, France
email: grigorios.fournodavlos@sorbonne-universite.fr

EMPLOYMENT

Sorbonne Université

Postdoctoral Researcher, 2018-2021
Supervisor: Jacques Smulevici

University of Cambridge

Research Associate, 2016-2018
Supervisor: Mihalis Dafermos

EDUCATION

University of Toronto

Ph.D., Mathematics, June 7, 2016
“Stability of singularities in geometric evolutionary PDE”
Advisor: Spyros Alexakis
M.S. in Mathematics, 2012

University of Athens

B.A. in Mathematics, 2010

RESEARCH INTERESTS

Geometric Analysis, PDE, General Relativity

PREPRINTS

(with J. Smulevici) *The initial boundary value problem in General Relativity: the umbilic case*, arXiv:2104.08851.

Future dynamics of FLRW for the massless-scalar field system with positive cosmological constant, arXiv:2104.03771.

(with I. Rodnianski and J. Speck) *Stable Big Bang formation for Einstein’s equations: the complete sub-critical regime*, arXiv:2012.05888.

(with J. Smulevici) *The initial boundary value problem for the Einstein equations with totally geodesic boundary*, arXiv:2006.01498.

(with S. Alexakis) *Stable space-like singularity formation for axi-symmetric and polarized near-Schwarzschild black hole interiors*, arXiv:2004.00692.

(with J. Luk) *Asymptotically Kasner-like singularities*, arXiv:2003.13591.

(with J. Smulevici) *On the initial boundary value problem for the Einstein vacuum equations in the maximal gauge*, arXiv:1912.07338.

PUBLICATIONS

(with J. Sbierski) *Generic blow-up results for the wave equation in the interior of a Schwarzschild black hole*, Arch. Ration. Mech. Anal. **235** (2020), Issue 2, 927-971.

(with A. Alho and A. T. Franzen) *The wave equation near flat Friedman-Lemaître-Robertson-Walker and Kasner Big Bang singularities*, J. Hyperbolic Differ. Equ. **16** (2019), no. 2, pp. 379-400.

(with V. Schlue) *On “hard stars” in general relativity*, Ann. Henri Poincaré **20** (2019), Issue 7, pp 2135-2172.

(with I. Chenn and I. M. Sigal) *The effective dynamics of the volume preserving mean curvature flow*, J. Stat. Phys. **172** (2018), no. 2, 458-476.

On the backward stability of the Schwarzschild black hole singularity, Comm. Math. Phys. **345** (2016), Issue 3, pp 923-971.

(with S. Alexakis and D. Chen) *Singular Ricci solitons and their stability under the Ricci flow*, Comm. Partial Differential Equations **40** (2015), no. 12, 2123-2172.

(with V. Nestoridis) *Generic approximation of functions by their Padé approximants*, J. Math. Anal. Appl. **408** (2013), no. 2, 744-750.

On a characterization of Arakelian sets, Izv. Nats. Akad. Nauk Armenii Mat. **47** (2012), no. 6, 3-18.

HONORS AND AWARDS

2016	Malcolm Slingsby Robertson Prize in Mathematics
2015-2016	International Graduate Student Scholarship, University of Toronto
2013-2016	Onassis Foundation PhD Fellowship
2011-2012	Onassis Foundation Scholarship for M.Sc.
2010	State Scholarship Foundation award for graduating top of my class (9.70/10), Department of Mathematics, University of Athens, Greece
2006-2008	State Scholarship Foundation scholar, Greece
2006	Eurobank EFG award for the highest score in the Greek national exams in my school.

INVITED TALKS

- Relativity seminar, Department of Physics, University of Vienna, 20 May, 2021.
- Séminaire dans le cadre du cours “Symétries cachées de la gravitation” (donné par prof. Henneaux), Collège de France, 19 May, 2021.
- Mathematical Relativity seminar, Department of Mathematics, Instituto Superior Técnico, 13 May, 2021.
- Analysis & PDE seminar (online), Department of Mathematics, Stanford University, 2 April, 2021.
- Analysis seminar (online), Department of Mathematics, Aristotle University of Thessaloniki, 30 March, 2021.
- Analysis seminar (online), Department of Mathematics, University of Toronto, 26 February, 2021.
- Joint ICL/UCL Pure Analysis and PDEs seminar (online), Department of Mathematics, Imperial College London, 19 February, 2021.
- Virtual seminar series, Princeton Gravity Initiative, 8 February, 2021.
- Analysis and PDE seminar (online), Department of Mathematics, University of Berkeley, 23 November, 2020.
- PDE seminar (online), Mathematical Institute, University of Oxford, 26 October, 2020.
- Analysis seminar, Laboratoire Analyse Géométrie Modélisation, Cergy Paris Université, 21 September, 2020.
- Analysis seminar (online), Department of Mathematics, Princeton University, 31 August, 2020.
- General Relativity seminar (online), CMSA, Harvard University, 22 June, 2020.

- Séminaire de Physique Mathématique - EDP, Institut de Mathématiques de Bordeaux, 18 February, 2020.
- Journée thématique “Evolution equations in General Relativity”, Institut Fourier, Grenoble, 13 December, 2019.
- Summer meeting of young researchers in mathematics, Department of Mathematics, University of Athens, 16-17 July 2019.
- Three days’ workshop in mathematical general relativity, Institut Camille Jordan, Lyon, April 15-17, 2019.
- Seminar on Mathematical General Relativity, Sorbonne Université, Paris, November 19, 2018.
- “Conference on Mathematical General Relativity and Nonlinear Wave Equations”, Institut Henri Poincaré, Paris (France) May 28-June 1, 2018.
- General Relativity seminar, DAMPT, University of Cambridge, November 17, 2017.
- Geometry and Analysis seminar, Queen Mary University of London, September 26, 2017.
- Séminaire de Relativité Générale Mathématique, IHES, May 22, 2017.
- Analysis seminar, School of Applied Mathematical and Physical Science, National Technical University of Athens, December 2016.
- 2016-17 Warwick EPSRC Symposium: Geometric PDEs, University of Warwick, December 2016.
- PDE seminar, Department of Mathematics, Instituto Superior Técnico, October 28, 2016.
- Mathematical Physics seminar, Department of Mathematics, Michigan State University, 2016.
- Analysis seminar, Department of Mathematics, McMaster University, 2016.
- Analysis seminar, Department of Mathematics, Princeton University, 2016.
- Analysis seminar, Department of Mathematics, Imperial College of London, 2015.
- Singularities in General Relativity, Fields Institute, June 15-18, 2015.
- International Conference on Black Holes, Fields Institute, June 2, 2015.
- Fields Geometric Analysis Colloquium, 2014.
- Analysis seminar, Department of Mathematics, University of Western Ontario, 2013.
- 6th World Congress of Nonlinear Analysts (WCNA), 2012.
- Universal Functions and Hypercyclic Operators, Department of Mathematics, University of Crete, 2011.
- Analysis Seminar, Department of Mathematics, University of Athens, 2011.

SCIENTIFIC AND
ADMINISTRATIVE
RESPONSIBILITIES

Reviewed articles for Communications in Mathematical Physics, Classical and Quantum Gravity, Journal of Mathematical Physics, Annals of PDE.

Co-organizer of the Mathematical Physics section in the First Congress of Greek Mathematicians (FCGM), University of Athens, June 25-30, 2018.

TEACHING
EXPERIENCE

Lecturer

Université de Versailles

Fall 2020 Mise à niveau Maths (ISTY, in French)

École Polytechnique

Winter 2020 Mathematical general relativity (MAT568, in French)

Teaching assistant

Sorbonne Université

Fall 2020 M2 Optimisation (LJLL, in French)

University of Cambridge

Easter 2017 Topics in Analysis

Lent 2017 Analysis of Functions and Topics in Analysis

University of Toronto

Spring 2015 General Relativity

Spring 2014 Complex Analysis

Fall 2013 Ordinary differential equations

Spring 2013 Calculus II and Linear Algebra II

Fall 2012 Calculus I and Linear Algebra I

University of Athens

Spring 2010 Real Analysis