

Grigorios Fournodavlos

CONTACT INFORMATION

Department of Mathematics & Applied Mathematics
University of Crete, Voutes Campus, 70013 Heraklion, Greece
email: gfournodavlos@uoc.gr

EMPLOYMENT

University of Crete

Assistant Professor, 2022-present

Princeton University

Associate Researcher Scholar, 2021-2022

Supervisor: Igor Rodnianski

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, Partial Differential Equations, General Relativity

PREPRINTS

1. (with Spyros Alexakis) Stable space-like singularity formation for axi-symmetric and polarized near-Schwarzschild black hole interiors, [arXiv:2004.00692](https://arxiv.org/abs/2004.00692)
2. (with Jacques Smulevici) On the initial boundary value problem for the Einstein vacuum equations in the maximal gauge, [arXiv:1912.07338](https://arxiv.org/abs/1912.07338)

PUBLICATIONS

1. (with Jonathan Luk) Asymptotically Kasner-like singularities, **Amer. J. Math.** 145 (2023), no. 4, pp. 1183-1272.
2. (with Igor Rodnianski and Jared Speck) Stable Big Bang formation for Einstein’s equations: The complete sub-critical regime, **J. Amer. Math. Soc.** 36 (2023), 827-916.
3. (with Jacques Smulevici) The initial boundary value problem in General Relativity: the umbilic case, **Int. Math. Res. Not.** 2023 (2023), Issue 5, 3790-3807.
4. Future dynamics of FLRW for the massless-scalar field system with positive cosmological constant, **J. Math. Phys.** 63 (2022), no. 3, 032502, 23pp.

5. (with Jacques Smulevici) The initial boundary value problem for the Einstein equations with totally geodesic boundary, **Comm. Math. Phys.** 385 (2021), no. 3, 1615-1653.
6. (with Jan 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.
7. (with Artur Alho and Anne 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.
8. (with Volker Schlue) On ‘hard stars’ in general relativity, **Ann. Henri Poincaré** 20 (2019), Issue 7, pp 2135-2172.
9. (with Ilias Chenn and Israel Michael Sigal) The effective dynamics of the volume preserving mean curvature flow, **J. Stat. Phys.** 172 (2018), no. 2, 458-476.
10. On the backward stability of the Schwarzschild black hole singularity, **Comm. Math. Phys.** 345 (2016), Issue 3, pp 923-971.
11. (with Spyros Alexakis and Dezhong Chen) Singular Ricci solitons and their stability under the Ricci flow, **Comm. Partial Differential Equations** 40 (2015), no. 12, 2123-2172.
12. (with Vassili Nestoridis) Generic approximation of functions by their Padé approximants, **J. Math. Anal. Appl.** 408 (2013), no. 2, 744-750.
13. On a characterization of Arakelian sets, **Izv. Nats. Akad. Nauk Armenii Mat.** 47 (2012), no. 6, 3-18.

PROJECT SINGINGR

In 2022, I received funding (ERC starting grant) from the European Research Council to support my research program.

RECENT TALKS

- “Hyperbolic PDEs and Nonlinear Evolution Problems”, MATRIX, Melbourne, 18-29 September, 2023.
- “Singularity Formation in General Relativity and Dispersive PDEs”, ICMS Bayes Centre, Edinburgh, 29 May - 02 June 2023.
- Geometric Analysis and PDE seminar, DPMMS, University of Cambridge, 13 March, 2023.
- General Relativity seminar, University of Münster, 8 November, 2022.
- “Stability and Instability in General Relativity”, Clay research conference, University of Oxford, 26-30 September, 2022.
- 23rd International Conference on General Relativity and Gravitation (GR23), Beijing, China, July 3-8, 2022
- Black Hole Initiative Colloquium, Harvard University, 18 April, 2022.
- “Hyperbolic Differential Equations in Geometry and Physics”, MATRIX, Melbourne, 4-8 April, 2022.
- “Aspects of Gravity, Mathematics and Physics”, Ecole Polytechnique, 21-22 March, 2022.
- Geometry, Analysis & Gravitation seminar, Department of Mathematics, Queen Mary University of London, 27 January, 2022.
- General Relativity & Geometric Analysis seminar, Department of Mathematics, Columbia University, 5 November, 2021.
- “New Trends in Geometric PDEs”, University of Münster, 1-5 November, 2021.
- “Mathematical and Numerical Aspects of Gravitation”, IPAM, 25-29 October, 2021.