Billel Guelmame

Curriculum Vitae

46 allée d'Italie, 69007 Lyon
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PhD of Mathematics, University Côte d'Azur, 2020

Personal information

Birth Batna (Algeria), October 2, 1993
Languages Arabic (native), French and English (fluent)
Citizenship Algerian-French

Research topics

Nonlinear hyperbolic partial differential equations
Conservation laws
Nonlinear water waves
Stochastic PDEs

Academic Positions

2022 - now *Postdoctoral associate* with Julien Vovelle at École Normale Supérieure de Lyon, France
- 2022 - 2023: Employed by CNRS
- 2023 - 2024: Employed by LABEX MILYON
- 2024 - now: ANR "ADA", ANR-19-CE40-0019.

2020 - 2022 *Temporarily Attached to Education and Research* (ATER), University Côte d'Azur, Nice, France

Education

2017–2020 **PhD** of mathematics at the University Côte d'Azur, Nice, France

Supervisors: Didier Clamond and Stéphane Junca

PhD thesis: On a Hamiltonian regularisation and regularity of entropy solutions of some nonlinear hyperbolic equations

Reporters:
- Adrian Constantin, Professor, University of Vienna
- Philippe G. LeFloch, Research Director, Sorbonne University

Composition du jury:
- Didier Clamond, Professor, University Côte d'Azur
- Adrian Constantin, Professor, University of Vienna
- Isabelle Gallagher, Professor, École Normale Supérieure Paris
- Sergey Gavrilyuk, Professor, Aix-Marseille University
- Paola Goatin, Research Director, Inria Sophia Antipolis
- Boris Haspot, Maître de conférences, Paris-Dauphine University
- Stéphane Junca, Maître de conférences, University Côte d'Azur

2016–2017 **Master 2** of Pure and Applied Mathematics at the University Côte d'Azur, Nice, France

2015–2016 **Master 1** of mathematics, PDEs and applications at the University of Batna 2, Algeria

2012–2015 **BS degree (Licence)** in fundamental mathematics at the University of Batna 2, Algeria

Teaching Experience

2023–2024 Claude Bernard University, Lyon, France
- *Maths - Cursus prépa* (Analysis and Algebra)

2021–2022 University Côte d'Azur, Nice, France
- *Maths 2* (Linear Algebra)
- *Maths Approfondissements 1* (Arithmetic)
- *Maths Approfondissements 2* (Calculus)
- *Maths enjeux 1* (Introductory mathematics for first-year students)
- *Compléments de Mathématiques* (Complex Numbers)

2021–2022 INSPE, Nice, France
- *Preparation Course for Master's in "Métiers de l'Enseignement, de l'Education et de la Formation" (MEEF)*

2020–2021 University Côte d'Azur, Nice, France
- *Maths Fondements 2* (Calculus)
- *Mathematical Methods: Mathematics and Engineering* (Basic mathematics for physics students: derivatives, integrals, curves, series, Fourier transformations)

2019–2020 University Côte d'Azur, Nice, France
- *Mathematical Methods: Mathematics and Engineering* (Basic mathematics for physics students: derivatives, integrals, curves, series, Fourier transformations)

2018–2019 University Côte d'Azur, Nice, France
- *Maths Fondements 2* (Calculus)

Participation to events

Nov 2023 Journées EDP Rhône-Alpes-Auvergne, Clermont-Ferrand, France

June 2023 Summer school "New Trends in Mathematical Fluid Dynamics", Grenoble, France

March 2023 Journées Jeunes EDPistes, Tours, France

March 2023 Local and non-local aspects in fluid mechanics, Lyon, France

Dec 2022 Conference MathFlows, CIRM, Marseille, France

Nov 2022 Journées EDP Rhône-Alpes-Auvergne, Lyon, France

June 2022 Summer school on fluids and turbulence, Lyon, France

June 2022 International Conference on Hyperbolic Problems, Theory, Numerics and Applications, Málaga, Spain

June 2022 Journées Nice–Toulon–Marseille, Porquerolles, France

Nov 2021 About the Saint-Venant equations, University Aix-Marseille, France

Aug 2021 Advanced Summer School in Mathematical Fluid Dynamics, Cargese, Corsica, France

Jun 2021 Nice–Toulon–Marseille days, Porquerolles, France

Sep 2019 Inhomogeneous Flows: Asymptotic Models and Interface Evolution, CIRM, Marseille, France

Jun 2019 Waves Côte d'Azur, Nice, France

May 2019 Colloquium of LJAD's PhD students, Barcelonnette, France

Nov 2018 GDR MecaWave, Fréjus, France

Jun 2018 PDE days 2018, Obernai, France

May 2018 Nice–Toulon–Marseille days, Porquerolles, France

May 2018 Colloquium of LJAD's PhD students, Peyresq, France

Selected talks

Oct 2024	Seminar Analyse, IЯMA, Strasbourg, France
Mar 2024	Seminar A3, Amiens, France
Feb 2024	*Virtual.* PM-EDP Seminar, Galilée Institute, France
Feb 2024	MAC Seminar at IMT, Toulouse, France
Jan 2024	Applied Math And Analysis Seminar at Duke University, United States
Nov 2023	EDP Rhône-Alpes-Auvergne 2023 Days, Clermont-Ferrand, France
Oct 2023	UMPA, ENS Lyon, France
Mar 2023	Young EDPists Days, Tours, France
Dec 2022	*Virtual. Quebec Analysis and Related Fields Seminar*, Laval University, Canada
Dec 2022	MathFlows Conference, CIRM, Marseille, France
Nov 2022	"Jeunes analystes et modélisateurs lyonnais" Days, Lyon, France
Oct 2022	Seminar of the *Physique Mathématique - EDP* team, Bordeaux, France
Jun 2022	International Conference on Hyperbolic Problems, Málaga, Spain
Jun 2022	Seminar of the EDPAN team, LJAD, Nice, France
Oct 2021	*Virtual.* Tassili Sunday Maths Seminar
Jan 2021	*Virtual.* TIFR, Bangalore, India
Nov 2018	MecaWave, Fréjus, France
Mar 2018	LJAD, Nice, France

Awards & Grants

2016–2017	Master excellence scholarship from J.A.Dieudonné mathematics laboratory, Nice, France
2022–2023	UMPA-CNRS Postdoctoral Fellowship, Lyon, France
2023–2024	LABEX MILYON Postdoctoral Fellowship, Lyon, France

International stays

2019 TIFR–CAM, Bangalore, India (two weeks). Invited by Professor Shyam Ghoshal, I worked with my thesis advisor Stéphane Junca at TIFR-CAM Bangalore on the regularizing effect of entropy solutions for certain nonlinear hyperbolic equations and their optimality.

Projects

2020-2022 IFCAM Project: Conservation Laws: BV^s, Control and Interfaces
- Principal Investigators: S.S. Ghoshal (TIFR, Bangalore), S. Junca (UCA, Nice)

Organization

2024 - now	Co-organizer of the Tassili Sunday Maths Seminar (TSMS)
2019	Co-organizer of the Colloquium of LJAD's PhD students, Barcelonnette, France

Preprints and publications

- **Published/Accepted papers**

11. B. Guelmame and J. Vovelle. Global dissipative martingale solutions to the variational wave equation with stochastic forcing. 2024.
arXiv:2403.03034 hal-04282928 Stochastics and Partial Differential Equations.

10. B. Guelmame and H. Houamed. Convergence rate for a regularized scalar conservation law. 2024.
arXiv:2403.03794 hal-04493491 Zeitschrift für Angewandte Mathematik und Physik.

9. B. Guelmame. On a Hamiltonian regularization of scalar conservation laws. 2024.

arXiv:2403.02218 hal-02512810 Discrete Contin. Dyn. Syst. A.

8. B. Guelmame. Global weak solutions of the Serre–Green–Naghdi equations with surface tension. 2023.
arXiv:2403.02214 hal-03585433 Annales de l'Institut Henri Poincaré C, Analyse non linéaire.

7. B. Guelmame. On the blow-up scenario for some modified Serre–Green–Naghdi equations. 2022.
arXiv:2403.02208 hal-03264688 Nonlinear Analysis.

6. B. Guelmame, D. Clamond and S. Junca. Local well-posedness of a Hamiltonian regularisation of the Saint-Venant system with uneven bottom. 2022.
arXiv:2402.15544 hal-02915262 Methods and Applications of Analysis.

5. B. Guelmame, S. Junca, D. Clamond and R. Pego. Global weak solutions of a Hamiltonian regularised Burgers equation. 2022.
arXiv:2402.15545 hal-02478872 J. Dynam. Differential Equations.

4. C. Bourdarias, A.P. Choudhury, B. Guelmame and S. Junca. Entropy solutions in BV^s for a class of triangular systems involving a transport equation. 2022.
arXiv:2402.16820 hal-02895603 SIAM J. Math. Anal.

3. B. Guelmame, D. Clamond and S. Junca. Hamiltonian regularisation of the unidimensional barotropic Euler equations. 2022.
arXiv:2402.15261 hal-02907304 Nonlinear Anal. Real World Appl.

2. S. Ghoshal, B. Guelmame, A. Jana and S. Junca. Optimal regularity for all time for entropy solutions of conservation laws in BV^s. 2020.
arXiv:2402.15250 hal-02495036 NoDEA Nonlinear Differential Equations Appl.

1. B. Guelmame, S. Junca and D. Clamond. Regularizing effect for conservation laws with a Lipschitz convex flux. 2019.
arXiv:2402.14967 hal-01943834 Commun. Math. Sci.