

Caterina Vâlcu

Contact information

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Post-doc FMJH, under the supervision of Cécile Huneau present
École polytechnique, FRANCE

PhD: On the Constraint Equations in General Relativity,
Adviser: Olivier Druet 2016-2019
Université Claude Bernard Lyon 1, FRANCE *M2 Arithmétique, Analyse, Géométrie* 2015-2016
École Polytechnique, Université Paris-Sud, Université Paris-Saclay, FRANCE
M1 Mathématiques Pures 2014-2015
École Polytechnique, FRANCE
Bachelor's Degree, Mathematics 2011-2014
Universitatea Alexandru Ioan Cuza, ROMÂNIA

Pre-prints and publications

- *The Constraint Equations in the Presence of a Scalar Field: The Case of the Conformal Method with Volumetric Drift*, (2019)
arXiv:1809.07218, Communications in Mathematical Physics.
- *Stability for small data: the drift model of the conformal method*, (2019)
math.univ-lyon1.fr/homes-www/valcu/stabilityforsmalldata.pdf
- *Thesis: Autour des équations de contrainte en relativité générale*, (2019)
math.univ-lyon1.fr/homes-www/valcu/thesis/thesis.pdf.

Current work

- *Initial data for Kaluza-Klein models with one compactified inner dimension*
- *The conformal method for initial data asymptotically flat manifolds and with arbitrary limits at infinity*

Invited talks

1. Central European Relativity Seminar 10, AEI Potsdam 2020
2. Séminaire de géométrie, Université de Tours 2019
3. Forum des Jeunes Mathématicien-ne-s, Géométrie et interactions, IHP 2019
4. Prix Jeunes Talents L'Oréal-UNESCO pour les femmes et la science 2019
5. Journée des entrants, CMLS, École polytechnique 2019
6. IWPDE@COGNE, Cogne 2019
7. Three Days' Workshop in General Relativity Conference, Université Lyon 1 2019
8. Seminar on Mathematical General Relativity, Université Sorbonne 2019
9. Geometry Seminar, Stanford University 2019
10. Séminaire Compréhensible à Grenoble, Université Grenoble Alpes 2019
11. Séminaire de géométrie, Université Paris Diderot 2019
12. Séminaire de l'équipe de EDP, analyse, Université Lyon 1 2019

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| 13. <i>Séminaire des doctorants et doctorantes</i> , Université Lyon 1 | 2018 |
| 14. <i>Inter'Actions 2018</i> , Université Lyon 1 | 2018 |
| 15. <i>GT Analyse géométrique</i> , Université Lyon 1 | 2018 |

Teaching

<i>TD Fondamentaux des Mathématiques II (math-info)</i>	(64h) 2017
<i>TD Fondamentaux des Mathématiques II (math-info)</i>	(64h) 2018
<i>TD Fondamentaux des Mathématiques II (prépa)</i>	(43h) 2019
<i>KHOLLES Math IV (prépa)</i>	(21h) 2019

Programs and visits

- *General Relativity, Geometry and Analysis: beyond the first 100 years after Einstein, Mittag Leffler Institute* (1 week) 2019
- *Visit at Stanford University* (1 week) 2019

Professional experience

Inter'Actions 2019 Organizational Committee 2018-2019

- This colloquium is organized by students, for students. It aims to bring together young researchers from all over France, giving them a chance to meet and talk about their own work.
- The organizational committee is in charge of gathering funds, inviting speakers and advertising the conference, amongst other things.

Bureau des doctorant.e.s 2018-2019

- The bureau des doctorant.e.s has as its main goal to foster communication between the doctoral students and the Institut Camille Jordan.

MATH α LYON 2017, 2018

Université Claude Bernard Lyon 1, FRANCE

- A program that brings pupils in contact with researchers. By engaging with a number of imaginative mathematical games, students are encouraged to use their problem-solving skills in a casual environment.

Summer School and Conference: Geometry and General Relativity July 2017

ESI, AUSTRIA

- The summer school consisted of lectures given by Bizouard, Corvino, Eichmair, Fajman, Galloway, Gillessen, Huang and Schoen.

Internship at Institut Montpellierain Alexander Grothendieck April – June 2016

Université Montpellier II, FRANCE

- I primarily studied papers by Corvino, Schoen and Carlotto on gluing techniques of Einstein constraint equations and their applications.
- My work consisted of writing a report and was supervised by Marc Herzlich.

Research project at Laboratoire Jacques-Louis Lions March – July 2015

Université Pierre et Marie Curie, FRANCE

- The goal of the internship was to understand the work of M. Dafermos and I. Rodnianski on the linear stability of the Kerr family.
- My work consisted of writing a report and was supervised by Jérémie Szeftel. The end result was evaluated by François Golse.
- Grade: A

Intern at Bibliothèque Centrale
 École Polytechnique, FRANCE

2014-2015

Languages

Romanian	native language
English	full professional proficiency
French	full professional proficiency
Mandarin	very basic knowledge

University of Cambridge ESOL Examinations, Certificate in Advanced English, Grade A 2010
 (Performance at Grade A demonstrates an ability at C2 in the Council of Europe language framework)

Test de connaissance du français (TCF), Niveau C2 2015

Honours

Prix Jeunes Talents L'Oréal-UNESCO pour les femmes et la science 2019

Bourse pour un mémoire de master hors Île-de-France 2016
 Fondation Mathématiques Jacques Hadamard

Sophie Germain Master Scholarship 2014, 2015
 Fondation Mathématiques Jacques Hadamard

Prix Henri Poincaré 2011
 École Polytechnique, FRANCE

- The prize is awarded to Romanian high school students based on their results at the national phase of the Mathematics Olympiad and an interview.

National phase of the Mathematics Olympiad in Romania

- Silver medal 2011, 2007
- Bronze medal 2006, 2008, 2009