Nicolas MARQUE

Personal Data

Place and Date of Birth: Toulouse, France | 22 March 1993
email: nicolas.marque@uni-potsdam.de

Education

Dec 9 2019	PhD defense: obtention of the diploma of *docteur de l'Université de Paris* Reviewers: Prof. Jan Metzger, Prof. Andrea Mondino Advisor: Dr. Paul Laurain President of the Jury: Prof. Laurent Hauswirth Jury: Dr. Ilaria Mondello Prof. Frédéric Hélein Prof. Olivier Druet Dr. Yann Bernard
Sept 2016-Dec 2019	PhD at **Paris Diderot** Research team Geometry and Dynamics Advisor: Prof. Paul Laurain
Sept 2015	Master's degree in Advanced Mathematics for research at **ENS**, Lyon Analysis of PDEs and Geometry with courses: *Minimal Surfaces* by Olivier Druet *Homogeneization* by Andro Mikelic *Symplectic Geometry* by Jean-Claude Sikorav *Optimal Transport* by Ivan Gentil *Evolution equations and boundaries* by Sylvie Benzoni Final Grade : 17/20 with mention : Very Good
Sept 2014	Master's degree in Mathematics for teaching at **ENS**, Lyon Preparation for the french national competitive exam, *l'Agrégation* Final Results : 8^{th} nationwide
Sept 2013	Master's degree in Mathematics at **ENS**, Lyon, 1^{st} year Final Grade : 16/20 with mention : Very Good
Sept 2012	Bachelor's degree in Mathematics at **ENS**, Lyon Final Grade : 15/20 with mention : Good
Sept 2010-Aug 2012	Preparation for the French competitive exam for the admittance to French *Grandes Ecoles* at **Lycée Pierre de Fermat**, Toulouse Final Results : Admission to **ENS** of Lyon
Sept 2007-Aug 2010	High School education at **Lycée Saint Exupéry**, Blagnac Final Grade : 19.75/20 with *Summa Cum Laude*

Professional situation

Apr 2020-Today	Temporary employee at Potsdam Universität. Post-doc supervisor: Jan Metzger

Work Experience

Sept 2019-March 2020	Teaching assistant at Diderot University, Paris
Sept 2016-Dec 2019	PhD under the supervision of Paul Laurain : *Moduli spaces of Willmore immersions*, teaching assistant for Bachelor students. Financed through CDSN
March 2016-July 2016	Intern at Diderot University, Paris, under the supervision of Paul Laurain
May 2014-July 2014	Intern at Diderot University, Paris, under the supervision of Paul Laurain
May 2013-July 2013	Intern at Paul Sabatier University, Toulouse, under the supervision of Dan Popovici

Teaching activities :

At Potsdam University

Sched Apr-Jul 2021	Lecturer: Mean curvature problems in euclidean space Advanced lectures for Master students
Nov 2020-Feb 2021	Teaching assistant : Analysis I Tutoring for Bachelor Students
Nov 2020-Feb 2021	Teaching assistant : PDE theory I Tutoring for Masters Students
Apr 2020-July 2020	Teaching assistant : PDE theory II Tutoring for Masters Students

At Paris University

Sept 2019-Oct 2019	Courses and tutoring for MRM1 Mathematics et Logic for first year students
Jan 2018-May 2018	"Colles" in MM4 Analysis and Algebra for second year students
Sept-Dec 2017, 2018, Jan-Avr 2020	Tutoring in measure theory and integration Measure theory for third year students
Jan 2017-May 2017	Tutoring in MM2 Analysis for first year students
Sept 2016-Dec 2016, Sept 2018-Dec 2018	Tutoring in RM1 Logic for first year students

Mathematic diffusion

Oct 2016-2019	Participation to the *Fête de la Science* Yearly event of mathematical diffusion for elementary and secondary students, and more broadly speaking to any person outside academia
Dec 2019	Supervision of interns at Paris University
Nov 17-19, March 18-19	Participation to the *rencontres master-doctorants* Talks and discussions between master and PhD students to incite interested students to pursue a research career

Administrative activities

Editorial activities

2019-2020 | Reviewer for Mathematische Zeitschrift

Event organization

Apr 2020-July 2020	Co-organization of the *Bourbakonfs* Organization of a weekly informal virtual seminar for PhD students of Paris University in order to maintain academic life despite the lockdowns
Nov 2019	Co-organization of the *rencontre master-doctorants* Organization of an informal seminar for master students, followed by a meal and discussions to incite interested students to pursue a research career
Sept 2018-Apr 2020	Co-organization of the *Bourbakettes* Organization of a weekly informal seminar for PhD students of Paris University

Administrative reunions

Déc 2018	Participation to the ANR day Presentation by a talk of the *ANR BLADE* project

Research activities

Conferences

Feb 2021	Speaker at the *1st Geometric Analysis Festival* (talk available online) Title of the talk: *Willmore energy, Willmore immersions, Willmore bubbling*
Feb 2021	Speaker at the *International Meeting on Lorentzian Geometry* (mini talk, available online) Title of the talk: *Conformal Gauss map and applications*
July 2019	Invited speaker to *1st Joint Meeting Brazil-France in Mathematics*, Rio de Janeiro Title of the talk: *An exploration of Willmore bubbling*

Seminars

Feb 2020	Invited speaker to the *Geometry seminar*, Melbourne Title of the talk: *Geometry of the conformal Gauss map*
Nov 2019	Invited speaker to the *Differential Geometry seminar*, Potsdam Title of the talk: *An exploration of Willmore bubbling*
Nov 2019	Invited speaker to the *Differential Geometry seminar*, Nancy Title of the talk: *An exploration of Willmore bubbling*
Oct 2019	Invited speaker to the *Geometry seminar*, Brussels Title of the talk: *On the compactness of Willmore immersions*
Oct 2019	Invited speaker to the *Geometry seminar*, Paris Title of the talk: *On the compactness of Willmore immersions*
July 2019	Invited speaker to the *Geometry seminar of UFC*, Fortaleza Title of the talk: *An exploration of Willmore bubbling*

PhD seminars

Apri 2020	Speaker for the *Bourbakonfs* (informal virtual seminar for PhD students) An analytic look at the sphere eversion
May 2019	Speaker for the *Bourbakettes* (informal seminar for PhD students) A panorama of curvature notions and their nuances
Nov 2018	Speaker for the *rencontre master-doctorants* Title of the talk : *Elastic energies in geometry*
Apr 2018	Speaker for the *Bourbakettes* An introduction to Bryant formalism and conformal geometry
Nov 2017	Invited speaker for the *séminaire des doctorants*, Amiens Title of the talk : *Elastic energies and Willmore surfaces*
Nov 2017	Speaker for the *Bourbakettes* An introduction to semi-Riemannian geometry and relativity theory
Jan 2017	Speaker for the *Bourbakettes* An introduction to concentration phenomena

Research visits

Feb 2020	Invitation to Melbourne by *Yann Bernard*
June-July 2019	Beneficiary of the COFECUB program, stay in Fortaleza thanks to the invitation of *Jorge Lira*. Beginning of a collaboration with *Jorge Lira* and *Rodrigo Avalós*

Conferences, summer schools and seminars

Jan 2020	*Geometry Day*, Créteil University, Créteil
Dec 2019	*Advances in Geometric Analysis*, Université de Paris, Paris
May 2019	*Variational Problems and the Geometry of Submanifolds*, CIRM, Luminy
Apr 2019	*Three days' workshop in mathematical general relativity*, UMPA, Lyon
Dec 2018	*Workshop in Geometric Analysis*, IHP, Paris
May 2018	*Oberwolfach Seminar: Spectral estimates on Noncompact Manifolds, applications to Geometry*, Oberwolfach
June 2017	*Nonlinear Analysis in Rome*, NDU, Rome
2016-2020	Weekly attendance to the *Geometry seminar*, Paris
Sept 2015	*Mathematics in General Relativity*, IHP, Paris
March 2014	*Analysis spring school*, SNS, Pise

Publications list

Publications in peer-reviewed journals

Apr 2020	*Minimal Bubbling for Willmore Surfaces.* International Mathematics Research Notices (2020). https://doi.org/10.1093/imrn/rnaa079
Feb 2020	*Conformal Gauss Map Geometry and Application to Willmore Surfaces in Model Spaces.* Potential Anal (2020). https://doi.org/10.1007/s11118-020-09825-9
Apr 2019	*An ε-regularity result with mean curvature control for Willmore immersions and application to minimal bubbling*, arXiv1904.015215, accepted by Annales de l'Institut Fourier (Jan 2021)

Preprints

Feb 2021	*Energy in Fourth Order Gravity*, arXiv:2102.00545, joint work with R. Avalos and J. Lira
Sept 2020	*Energy Estimates for the Tracefree Curvature of Willmore Surfaces and Applications*, arXiv:2009.10180, joint work with Y. Bernard and P. Laurain

Books/Research memoirs

Sched Aug 2021	*Mean curvature problems in euclidean space* (Lecture notes)
Dec 2019	*Moduli spaces of Willmore immersions* (PhD thesis)

Languages

Castellano:	B1 (once C1, but fell out of practice)
Deutsch:	B1
English:	C2
Français:	Mothertongue
Nihon :	Beginner

Informatic languages

Maple :	Good knowledge (formal calculus and animations)
Scilab :	Good knowledge (scientific calculus and animations)
Latex :	Mastered

Professional Interests

Geometric Analysis, namely the closure of the minimal surfaces and Willmore surfaces subdomains. Semi-riemannian geometry, conformal gauss map and branching consequences.
Relativity theory, mathematics for physics and physics itself.
Interaction between academia and civil society.

Developing : Geometric Measure Theory, DPW techniques.

Active research subjects

Willmore bubble trees analysis
Conformal Gauss map
Willmore surfaces classification
Fourth order PDEs
Einstein equations
Lovelock theories, Bach spaces