

# Nicolas MARQUE

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: France | 22 March 1993  
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## WORK EXPERIENCE

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<i>Current</i>	3 <sup>rd</sup> year of PhD Student at DIDEROT UNIVERSITY, Paris, under the supervision of Paul Laurain.
SEPT 2016	PhD under the supervision of Paul Laurain : <i>Moduli spaces of Willmore immersions</i> . Studying the compactness of Willmore surfaces we wish to prove the constraints of the (non linear) Willmore equations prevent bubbles from appearing, starting with the still open problem of an Enneper bubble.
MARCH 2016-JULY 2016	Intern at DIDEROT UNIVERSITY, Paris, under the supervision of Paul Laurain. Learning Tristan Rivière formalism for $L^2$ second fundamental form immersions and the $\epsilon$ -regularity of Willmore surfaces and Bryant classification of Willmore spheres. Rewriting Yuxiang Li's proof of the embedded Willmore surfaces' compactness
MAY 2014-JULY 2014	Intern at DIDEROT UNIVERSITY, Paris, under the supervision of Paul Laurain. Introduction to Willmore surfaces, studying and rewriting two partial proofs of the Willmore conjecture.
MAY 2013-JULY 2013	Intern at PAUL SABATIER UNIVERSITY, Toulouse, under the supervision of Dan Popovici. Studying Hodge theory and Kähler manifolds.

## PUBLICATIONS

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### Preprints

JUN 2019	Minimal Bubbling for Willmore Surfaces, arXiv1906.00248.
APR 2019	An $\varepsilon$ -regularity result with mean curvature control for Willmore immersions and application to minimal bubbling, arXiv1904.015215.
MARCH 2019	Conformal Gauss Map Geometry and Application to Willmore Surfaces in Model Spaces, arXiv1903.07475.

## TEACHING EXPERIENCE

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### At Paris Diderot University

JAN 2018-MAY 2018	Teaching assistant in MM4. Analysis and algebra for 2 <sup>nd</sup> year Bachelor students.
SEPT 2017-DEC 2017, SEPT 2018- NOW	Teaching assistant in Measure Theory. Measure Theory and Lebesgue Integral for 3 <sup>rd</sup> year students.
JAN 2017-MAY 2017	Teaching assistant in MM2. Analysis and algebra for 1 <sup>st</sup> year Bachelor students.
SEPT 2016-DEC 2016, SEPT 2018-NOW	Teaching assistant in RM1. Logic for 1 <sup>st</sup> year Bachelor students.

## EDUCATION

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- Current* 3<sup>rd</sup> year of PhD at **Paris Diderot**  
Research team Geometry and Dynamics  
Advisor: Prof. Paul LAURAIN and Prof. Frédéric HÉLEIN
- SEPT 2016 PhD at **Paris Diderot**  
Research team Geometry and Dynamics  
Advisor: Prof. Paul LAURAIN and Prof. Frédéric HÉLEIN
- 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<sup>th</sup> nationwide.
- SEPT 2013 Master's degree in Mathematics at **ENS**, Lyon, 1<sup>st</sup> 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*.

## ADDITIONAL ACTIVITIES :

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- JUL 2019 | *Participation to the "1st Joint Meeting Brazil-France in Mathematics"*
- MAY 2019 | *Participation to "Variational Problems and the Geometry of Submanifolds", CIRM, Luminy.*
- MAY 2019 | *Participation to the informal seminar for PhD students*  
A panel of the different notions of curvatures and their nuances.
- APR 2019 | *Participation to "Three days' workshop in mathematical general relativity", UMPA, Lyon.*
- DEC 2018 | *Participation to the "Workshop in Geometric Analysis", IHP, Paris.*
- NOV 2018 | *Speaker at the "Master-PhD Students encounters".*  
Talks and following discussions among students to encourage interested students to start a research career. My contribution focused on elastic energies and geometric analysis.
- OCT 2018-TODAY | *Co-organization with Alex Panetta of a weekly informal seminar for PhD students*
- MAY 2018 | *Participation to the "Spectral Estimates on Noncompact Manifolds and Applications to Geometry" Seminar in Oberwolfach, Germany.*
- APR 2018 | *Participation to the informal seminar for PhD students*  
An introduction to Bryant representation of spheres and conformal geometry for non specialists.
- NOV 2017 | *Participation to the PhD students seminar of Amiens University*  
Elastic energies and Willmore surfaces.
- NOV 2017 | *Participation to the informal seminar for PhD students*  
An introduction to Semi-Riemannian geometry and Relativity Theory for non specialists.
- JUN 2017 | *Participation to the "Non Linear Analysis in Rome" seminar*
- JAN 2017 | *Participation to the informal seminar for PhD students*  
An introduction to bubbling phenomena for non specialists.
- OCT 2016, 2017, 2018 | *Participation to the "Fête de la Science"*  
Yearly event organized to reach out to children and beyond the civil society in order to create vocations. Activities include soap films and bubbles to illustrate elastic principles, polyhedrons and Euler characteristics, mathematic games, knots and braids...
- SEPT 2015 | *Participation to the summer school "Mathematics in Relativity theory" Seminar at the IHP, Paris.*
- MARCH 2014 | *Participation to the spring school ENS Lyon- SNS Pisa*

## LANGUAGES

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CASTELLANO: Basic Knowledge (once Fluent but fell out of practice)  
DEUTSCH: Beginner  
ENGLISH: Fluent  
FRANÇAIS: Mother tongue  
NIHON : Beginner

## PROFESSIONAL INTERESTS :

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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 research world and civil society.

Developing : Geometric Measure Theory.