



# Mattia Fogagnolo

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## Academic career

- 2020 **Junior Visiting Position**, *Centro De Giorgi, Pisa*.  
Winner of a 2-years postdoc position in *Topology, Differential Geometry and/or Geometric Analysis*

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## Education

- February 2020 **PhD thesis defense**, *University of Trento*, Awarded of the PhD title with merits.  
Thesis: *Geometric Applications of Linear and Nonlinear Potential Theory*
- 2016 **PhD in Mathematics Admission**, *University of Trento*,  
Admitted by titles and exams to the Doctorate School in Mathematics, XXXII ciclo.  
I worked on Geometric Analysis under the guide of L. Mazziere.
- 2015 **Master Degree in Mathematics**, *University of Padova*,  
Score: 110/110 cum laude.  
Thesis: *Variation Formulas for  $H$ -perimeter in Heisenberg groups*.  
Advisor: R. Monti.
- 2013 **Bachelor Degree in Mathematics**, *University of Padova*.  
Thesis: *Una nuova dimostrazione del teorema di Kolmogorov-Riesz-Fréchet*.  
Advisor: A. Marson.
- 2010 **High School Degree**, *Liceo Scientifico P. Paleocapa, Rovigo*.

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## Research interests

I study PDEs, including Geometric Flows, Riemannian and sub-Riemannian geometry, Calculus of Variations and in particular in the mutual connections among these fields. More precisely, I am interested in Potential Theory, curvature flows with particular attention to extrinsic flows, geometric variational problems and geometric inequalities. These topics are to be considered in relation to the underlying geometry.

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## Scientific Publications and Preprints

- 2019 **M. Fogagnolo**, *Geometric applications of Linear and Nonlinear Potential Theory*.  
PhD thesis

- 2019 **M. Fogagnolo and L. Mazzieri**, *On the strictly outward minimising hull and  $p$ -capacity in Riemannian manifolds*.  
Preprint, to appear
- 2019 **V. Agostiniani, M. Fogagnolo and L. Mazzieri**, *Minkowski Inequalities via Nonlinear Potential Theory*, Preprint, ArXiv: <https://arxiv.org/pdf/1906.00322.pdf>.  
Submitted
- 2019 **V. Agostiniani, M. Fogagnolo and L. Mazzieri**, *Sharp geometric inequalities for closed hypersurfaces on manifolds with nonnegative Ricci curvature*, Preprint, ArXiv : <https://arxiv.org/pdf/1812.05022.pdf>.  
Submitted
- 2019 **M. Fogagnolo, L. Mazzieri and A. Pinamonti**, *Geometric aspects of  $p$ -capacitary potentials*, Ann. Inst. H. Poincaré Anal. Non Linéaire. <https://doi.org/10.1016/j.anihpc.2018.11.005>, ArXiv : <https://arxiv.org/abs/1803.10679v2>.
- 2016 **M. Fogagnolo, R. Monti and D. Vittone**, *Variation Formulas for  $H$ -rectifiable Sets*, Annales Academiæ Scientiarum Fennicæ, <https://doi.org/10.5186/aasfm.2017.4220> .

### Works in progress

**M. Fogagnolo and A. Pinamonti**, *Geometric properties of solutions to the sub- $p$ -Laplacian in Heisenberg groups*.

**M. Fogagnolo**, *Strict starshapedness and asymptotic behaviour of  $p$ -capacitary potentials in warped products metrics*.

**L. Benatti, M. Fogagnolo and L. Mazzieri**, *Quantitative geometric inequalities in manifolds with nonnegative Ricci curvature*.

**L. Benatti, M. Fogagnolo and L. Mazzieri**, *A Minkowski inequality in asymptotically conical manifolds*.

### Funded Projects

**GNAMPA Project: "Aspetti geometrici in teoria del potenziale lineare e nonlineare"**, Joint project with V. Agostiniani, L. Mazzieri and A. Pinamonti..  
<http://www.di.univr.it/?ent=progetto&id=5380>

### Conferences, Schools, Workshops

#### Contributed talks and seminars

- September 2019 **Workshop on Spectral Geometry and Analysis of Differential Operators**, Padova, Title of the talk: Geometric Inequalities through  $p$ -harmonic potentials.
- May 2019 **III Brescia-Trento Nonlinear Days**, Trento, Title of the talk: Geometric inequalities through  $p$ -harmonic potentials.
- March 2019 **Ciclo di seminari M.A.P.**, Pisa, Title of the talk: Classical and new problems in Geometric Analysis.
- February 2019 **XXIX Convegno Nazionale di Calcolo delle Variazioni**, Levico Terme, Title of the talk: A sharp isoperimetric inequality on manifolds with nonnegative Ricci curvature.
- September 2018 **Progressi recenti in Geometria Reale e Complessa-XI**, Levico Terme, Title of the talk: Applications of monotonicity formulas to manifolds with non-negative Ricci curvature.
- May 2018 **New trends in PDEs**, Catania, Title of the talk: Geometric aspects of  $p$ -capacitary potentials.
- March 2018 **Geometric evolution equations**, Regensburg, Title of the talk: A Willmore inequality on ALE manifolds.

## Poster sessions

- June 2018 **Geometric analysis**, *CIME School in Cetraro*, Poster title: A Willmore type inequality on manifolds with non-negative Ricci curvature.  
Lectures by Topping, Neves, Fraser, Young

## Participation

- February 2020 **XXX Convegno Nazionale di Calcolo delle Variazioni**, *Levico Terme*.
- July 2019 **ICTP School on Geometry and Gravity**, *ICTP, Trieste*.  
Lectures by, among the others: Cederbaum, Chrusciel, Dafermos, Schoen, Wald
- June 2019 **Geometric Analysis and General Relativity. A conference in honour of Gerhard Huisken's 60th birthday**, *Zurich, ETH*.  
Seminars by, among the others: Yau, Colding, Minicozzi, Neves, Coda-Marques, Hamilton, Andrews..
- June 2018 **International School on Extrinsic Curvature Flows**, *Trieste, ICTP*.  
Lectures by, among the others, Huisken, Sinestrari, Otto, Angenent, Daskalopoulos
- January 2018 **XXVIII Convegno Nazionale di Calcolo delle Variazioni**, *Levico Terme*.
- November 2017 **Geometric aspects of PDEs**, *Firenze*.
- July 2017 **Between Geometry and Relativity**, *ESI Summer School in Vienna*.  
I have attended lectures by, among others, R. Schoen, M. Eichmair, G. Galloway, J. Corvino
- June 2017 **Geometry of PDEs and related problems**, *CIME School in Cetraro*.  
Admitted with partial financial support. I have attended lectures by X. Cabré, D. Peralta-Salas, W. Reichel, H. Shahgholian, A. Henrot.
- May 2017 **Brescia-Trento Nonlinear days**, *Trento*.
- January 2017 **XXVII Convegno Nazionale di Calcolo delle Variazioni**, *Levico Terme*.
- July 2016 **Cortona Summer School 2016**, *SMI*.  
I have been admitted and I have participated to the two-week course "Existence and regularity for the Plateau problem", taught by Professors Luigi Ambrosio and Camillo De Lellis, at Palazzone of Cortona.

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## Teaching Experience

- 2019-2020 **Teaching Assistant**, *University of Trento*, Department of Engineering, DICAM, Analysis 2.  
I am supporting Professor L. Mazziari
- 2018-2019 **Teaching Assistant**, *University of Trento*, Department of Mathematics, Geometric Analysis.  
I supported (exercise sessions, theory complements, preparation and correction of tests) Professor L. Mazziari
- 2017-2018 **Teaching Assistant**, *University of Trento*, Department of Engineering, Analisi 2.  
I supported (exercise sessions, theory complements, preparation and correction of tests) Professor A. Valli and Dr. A. Pinamonti
- 2017 **CLIL Project**, *Liceo Scientifico DaVinci, Trento*.
- 2016 **Teaching assistant**, *University of Padova*, Department of Physics and Astronomy, Analisi 2.  
I supported (exercises sessions, theory complements) the course taught by R. Monti.
- 2016 **E-tutor for the project "Integrating Technology in Higher Education to enhance work life balance"**, *University of Padova*, Department of Mathematics, Analisi 1.  
I integrated the course taught by G. Treu by exercises and online tests uploaded on Moodle.
- 2016 **Tutor for Docsity**, [www.docsity.com](http://www.docsity.com).  
I gave online lesson at any level, even in preparation to University exams (Analysis, Linear Algebra..).

- 2015-2016 **Teacher at UniD, Padova.**  
I taught a course about mathematics and physics in preparation to the entrance exams for the courses in Medicine and Odontology.
- 2014-2016 **Tutor service, University of Padova, Department of Mathematics, School of Engineering.**  
I prepared exercises sessions of Analysis and Linear Algebra for first year students of Mathematics and Engineering.
- 2015 **Online Pre-Calculus, Iversity, www.iversity.org .**  
I have been part of a team of mathematicians guided by Professors C. Mariconda and A. Tonolo for the realization of video-lessons aimed at the recovery of basic mathematical notions necessary for various courses in Engineering and Sciences, uploaded on the online platform Iversity.

## Known Languages

<b>Italian</b>	Mother tongue	
<b>Written English</b>	Advanced	
<b>Spoken English</b>	Advanced	
<b>Written French</b>	Basic	<i>I can understand very simple texts.</i>

***I authorize the treatment of the personal data contained in this curriculum vitae, in relation with art.13 of D.Lgs 196/2003.***