

PERSONAL DATA

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First Name: DEBORA  
Surname: IMPERA  
Born: IGLESIAS (CI), 04/04/1985  
Nationality: ITALIAN  
Contact address: Via Giuseppe Garibaldi, 46  
10122, Turin (TO), Italy  
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CURRENT POSITIONS

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Since December 2021 Associate Professor,  
Dipartimento di Scienze Matematiche,  
Politecnico di Torino

PREVIOUS POSITIONS

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December 2018–December 2021 Ricercatore a tempo determinato di tipo B,  
Dipartimento di Scienze Matematiche,  
Politecnico di Torino  
March 2017–December 2018 Ricercatore a tempo determinato di tipo A,  
Dipartimento di Scienze Matematiche,  
Politecnico di Torino  
May 2012–April 2016 Assegno di Ricerca,  
Dipartimento di Matematica e Applicazioni,  
Università degli Studi di Milano-Bicocca

ACADEMIC HABILITATIONS

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April 2016 National Italian habilitation as Professore di II fascia  
in Geometry and Algebra.  
Sector: 01/A2.  
Validity: 30/03/2018?30/03/2024  
February 2016 Qualification Française aux fonctions de *Maître de conférences*.  
25ème section.

EDUCATION

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- March 2012            Ph.D. in Mathematics,  
 Università degli Studi di Milano  
 Thesis–Title: *On the Geometry of Newton operators*  
 Supervisor: Marco Rigoli  
 Defended on March 7th 2012
- September 2008      Laurea specialistica (master degree) cum laude in Mathematics  
 Università degli Studi di Cagliari (Cagliari, Italy)  
 Thesis–title: Alcune proprietà delle applicazioni e delle immersioni  
 biarmoniche  
 Supervisor: Stefano Montaldo
- October 2006        Laurea triennale (bachelor) cum laude in Mathematics  
 Università degli Studi di Cagliari (Cagliari, Italy)  
 Thesis–title: *Approssimazione dei numeri irrazionali*  
 Supervisor: Luigi Cerlienco
- July 2003            Diploma di Maturità (A–level) with full marks  
 Liceo Scientifico Edoardo Amaldi (Carbonia (CI), Italy)

## PUBLICATIONS

- [IRV2]    D. IMPERA, M. RIMOLDI, G. VERONELLI  
*Higher order distance-like functions and Sobolev spaces*  
 To appear on ADVANCES IN MATHEMATICS  
 (Preliminary version on **arXiv:1908.10951**)
- [IPR]     D. IMPERA, S. PIGOLA, M. RIMOLDI  
*The Frankel property for self-shrinkers from the viewpoint of elliptic PDE's*  
 JOURNAL FÜR DIE REINE UND ANGEWANDTE MATHEMATIK  
**773** (2021), 1-20.
- [IRV1]    D. IMPERA, M. RIMOLDI, G. VERONELLI  
*Density problems for second order Sobolev spaces and cut-off functions  
 on manifolds with unbounded geometry*  
 INTERNATIONAL MATHEMATICS RESEARCH NOTICES  
 (2021), no. 14, 10521-10558.
- [IR4]     D. IMPERA, M. RIMOLDI  
*Index and first Betti number of  $f$ -minimal hypersurfaces: general ambients*  
 ANNALI DI MATEMATICA PURA ED APPLICATA  
**199** (2020), no. 6, 2151-2165.
- [IRS]     D. IMPERA, M. RIMOLDI, A. SAVO  
*Index and first Betti number of  $f$ -minimal hypersurfaces and self-shrinkers*  
 REVISTA MATEMATICA IBEROAMERICANA.  
**36** (2020), no. 3, 817-840.
- [IR3]     D. IMPERA, M. RIMOLDI  
*Quantitative index bounds for translators via topology*  
 MATHEMATISCHE ZEITSCHRIFT.  
**292** (2019), no.1-2, 513-527.
- [I2]      D. Impera

- Rigidity and gap results for low index properly immersed self-shrinkers in  $\mathbb{R}^{m+1}$ .*  
DIFFERENTIAL GEOM. APPL.  
**64** (2019), 1-12.
- [IP] D. Impera, E. Musso  
*Space-like Willmore immersions.*  
RIV. MATH. UNIV. PARMA (N.S.)  
**9** (2018), no. 2, 255-282..
- [ILPS] D. Impera, J.H Lira, S. Pigola, A.G. Setti  
*Height estimates for Killing graphs.*  
J. GEOM. ANAL.  
**28** (2018), no. 3, 2857-2885.
- [IP] D. Impera, S. Pigola  
*On the growth of supersolutions of nonlinear PDE's on exterior domains.*  
NONLINEAR ANALYSIS  
Volume **146** (2016), 20–31.
- [IR2] D. Impera, M. Rimoldi  
*Rigidity results and topology at infinity of translating solitons of the mean curvature flow.*  
COMMUN. CONTEMP. MATH.  
Volume **19** (2017), no. 6, 21 pp.
- [IPS] D. Impera, S. Pigola and A. G. Setti  
*Potential theory for manifolds with boundary and applications to controlled mean curvature graphs.*  
J. REINE ANGEW. MATH.  
Volume **733** (2017), 121-159.
- [IR] D. Impera, M. Rimoldi  
*Stability properties and topology at infinity of  $f$ -minimal hypersurfaces.*  
GEOM. DEDICATA  
Volume **178** (2015), 21–47.
- [GI] S. C. García-Martínez and D. Impera  
*Height estimates and half-space theorems for spacelike hypersurfaces in generalized Robertson-Walker spacetimes.*  
DIFFERENTIAL GEOM. APPL.  
Volume **32** (2014), 46–67.
- [GIR] S. C. García-Martínez, D. Impera, and M. Rigoli  
*A sharp height estimate for compact hypersurfaces with constant  $k$ -mean curvature in warped product spaces.*  
PROC. EDINB. MATH. SOC., available on CJO2014.
- [AIR] L. J. Alías, D. Impera, M. Rigoli  
*Hypersurfaces of constant higher order mean curvature in warped products.*  
TRANS. AMER. MATH. SOC.  
Volume **365** (2013), no. 2, 591–621.
- [I] D. Impera  
*Comparison Theorems in Lorentzian Geometry and applications to spacelike hypersurfaces*  
J. GEOM. PHYS.  
Volume **62** (2012) no. 2, 412–426.

- [AIR2] L. J. Alías, D. Impera, M. Rigoli  
*Spacelike hypersurfaces of constant higher order mean curvature in generalized Robertson-Walker spacetimes*  
 MATH. PROC. CAMBRIDGE PHILOS. SOC.  
 Volume **152** (2012) 365–383.  
 (see also the erratum on Math. Proc. Cambridge Philos. Soc.)
- [IMR] D. Impera, L. Mari, M. Rigoli  
*Some geometric properties of hypersurfaces with constant  $r$ -mean curvature in Euclidean space*  
 PROC. AMER. MATH. SOC.  
 Volume **139** (2011), no. 6, 2207–2215.  
 (see also the corrigenda on Proc. Amer. Math. Soc.)
- [IM] D. Impera, S. Montaldo  
*Totally biharmonic submanifolds*  
 Differential geometry, 232–246, World Sci. Publ., Hackensack, NJ, 2009.

## TALKS, SEMINARS AND POSTERS

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- July 2021                      UNIVERSITÀ DI PISA, PISA, ITALY  
*Real and complex manifolds.*  
*The mathematical heritage of Edoardo Vesentini*  
 Invited talk:  
 “Quantitative index bounds for  $f$ -minimal hypersurfaces in the Euclidean space.”
- March 2021                    UNIVERSITY OF TENNESSEE KNOXVILLE, USA  
*Geometric analysis seminar*  
 Invited online seminar talk:  
 “Quantitative index bounds for  $f$ -minimal hypersurfaces in the Euclidean space.”
- September 2019            UNIVERSITÀ DI PAVIA, PAVIA, ITALY  
*XXI Congresso dell’Unione Matematica Italiana*  
 Invited communication:  
 “Indice e primo numero di Betti per ipersuperfici  $f$ -minime e self-shrinkers’
- September 2018            UNIVERSITÀ DI CAGLIARI, CAGLIARI, ITALY  
*Differential Geometry Workshop 2018*  
*Harmonic maps, biharmonic maps, harmonic morphism and related topics*  
 Invited talk:  
 “Index and first Betti number of  $f$ -minimal hypersurfaces and self-shrinkers’
- May 2018                    UNIVERSITÀ DEGLI STUDI DI CAGLIARI, ITALY  
*Workshop del Corso di Studi in Matematica:*  
*La ricerca raccontata agli studenti...dagli ex studenti*  
 Invited seminar talk:  
 “Topologia delle lamine saponate”
- July 2017                    UNIVERSITÄT KONSTANZ, KONSTANZ, GERMANY

- Oberseminars Partielle Differentialgleichungen*  
Invited seminar talk:  
*“Rigidity results and topology at infinity of translating solitons of the mean curvature flow.”*
- April 2017 UNIVERSITÀ DI TORINO, TORINO, ITALY  
*Differential Geometry Days*  
Invited talk:  
*“Rigidity results and topology at infinity of translating solitons of the mean curvature flow.”*
- January 2016 INSTITUT HENRI POINCARÉ, PARIS, FRANCE  
*Seminaire de Géométrie*  
Invited seminar talk:  
*“Topology at infinity of translating solitons of the mean curvature flow.”*
- September 2015 UNIVERSITÀ DI SIENA, SIENA, ITALY  
*XX Congresso dell’Unione Matematica Italiana*  
Contributed talk:  
*“Solitoni traslati per il flusso di curvatura media in  $\mathbb{R}^{n+1}$ ”*
- June 2015 FREIE UNIVERSITÄT, BERLIN, GERMANY  
*Topics on Geometric Analysis*  
Invited seminar talk:  
*“Rigidity results and topology at infinity of translating solitons of the mean curvature flow.”*
- February 2015 UNIVERSITÀ DEGLI STUDI DI CAGLIARI, ITALY  
*Seminari di Matematica 2015*  
Invited seminar talk:  
*“Alcuni aspetti della teoria del potenziale su varietà con bordo e applicazioni a grafici con curvatura media controllata”*
- October 2014 LEVICO TERME, TRENTO, ITALY  
*Progressi Recenti in Geometria Reale e Complessa - IX*  
Invited talk:  
*“Some aspects of potential theory on complete manifolds with boundary and applications to controlled mean curvature graphs”*
- July 2014 UNIVERSIDAD DEL PAÍS VASCO, BILBAO, SPAIN  
*First Joint International Meeting of the Italian and Spanish Mathematical Societies RSME-SCM-SEMA-SIMAI-UMI*  
Invited talk:  
*“Potential Theory for manifolds with boundary and applications to controlled mean curvature graphs”*
- February 2014 UNIVERSIDADE FEDERAL DO CEARÁ, FORTALEZA, BRASIL  
*VII Workshop on Geometric Analysis*  
Invited talk:  
*“Stability properties and topology at infinity of  $f$ -minimal hypersurfaces”*
- May 2013 UNIVERSITÀ DI MILANO–BICOCCA, ITALY  
*Seminari di Analisi Armonica*  
Seminar:

*“Stime di altezza per grafici a curvatura media costante”*

September 2011	UNIVERSIDAD DE GRANADA, SPAIN <i>VI International Meeting on Lorentzian Geometry</i> Contributed talk: <i>“Spacelike hypersurfaces of constant higher order mean curvature in generalized Robertson-Walker spacetimes”</i>
February 2011	UNIVERSIDAD DE GRANADA, SPAIN <i>Spanish–Japanese Workshop on Differential Geometry in Granada</i> Poster: <i>“Hypersurfaces of constant higher order mean curvature in warped products”</i>
December 2010	UNIVERSITÀ DEGLI STUDI DI CAGLIARI, ITALY <i>Seminari di Geometria</i> Seminar: <i>“Superfici con curvatura media di ordine <math>k</math> costante in spazi dotati di metriche distorte”</i>

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 INVITATIONS
 

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May 2018	UNIVERSITÀ DI CAGLIARI, CAGLIARI, ITALY (1 WEEK)
Jan.-April 2016	UNIVERSITÉ PARIS-EST MARNE LA VALLÉE, FRANCE (3 MONTHS) Winner of a INDAM scholarship for a research period abroad
February 2015	UNIVERSITÀ DI CAGLIARI, CAGLIARI, ITALY (1 WEEK)
February 2014	UNIVERSIDADE FEDERAL DO CEARÁ, FORTALEZA, BRASIL (2 WEEKS)
Sept.-Dec. 2012	INSTITUT HENRI POINCARÉ, PARIS, FRANCE (3 MONTHS) Guest for the research trimester in <i>Conformal and Kähler Geometry</i>

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 TEACHING EXPERIENCE
 

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March-June 2022	Politecnico di Torino Ingegneria (Triennale) Lecturer (60 hours) for the following course: <i>“Algebra lineare e Geometria”</i>	TORINO, ITALY
March-June 2022	Politecnico di Torino Ingegneria (Triennale) Lecturer (40 hours) for the following course: <i>“Algebra lineare e Geometria”</i>	TORINO, ITALY
March-June 2021	Politecnico di Torino Collaboration (10 hours) to the courses <i>“Laboratorio di Problem Solving 2 - Intraprendenti”</i> .	TORINO, ITALY
March-June 2021	Politecnico di Torino Ingegneria (Triennale) Lecturer (60 hours) for the following course:	TORINO, ITALY

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	“Algebra lineare e Geometria”	
March-June 2020	Politecnico di Torino Ingegneria (Triennale) Lecturer (60 hours) for the following course: “Algebra lineare e Geometria”	TORINO, ITALY
Oct. 2018-Jan. 2019	Politecnico di Torino Architettura (Triennale) Teaching assistant (40 hours) for the following course: “Istituzioni di Matematica”	TORINO, ITALY
Oct. 2018-Jan. 2019	Politecnico di Torino Architettura (Triennale) Teaching assistant (40 hours) for the following course: “Istituzioni di Matematica”	TORINO, ITALY
Oct. 2017-Jan. 2018	Politecnico di Torino Architettura (Triennale) Teaching assistant (40 hours) for the following course: “Istituzioni di Matematica”	TORINO, ITALY
March-June 2017	Politecnico di Torino Pianificazione (Triennale) Teaching assistant (20 hours) for the following course: “Calcolo”	TORINO, ITALY
March-June 2015	Università degli Studi di Milano-Bicocca Matematica (Triennale) Teaching assistant (24 hours) for the following course: “Geometria 2”	MILANO, ITALY
March-June 2014	Università degli Studi di Milano-Bicocca Matematica (Triennale) Teaching assistant (24 hours) for the following course: “Geometria 2”	MILANO, ITALY
March-June 2012	Politecnico di Milano Ingegneria Industriale Teaching assistant (48 hours) for the following course: “Analisi 2 e Geometria”	MILANO, ITALY
March-June 2012	Politecnico di Milano Ingegneria Gestionale Teaching assistant (20 hours) for the following course: “Probabilità e Statistica Matematica”	MILANO, ITALY
March-June 2012	Università degli Studi dell’Insubria, Matematica (Triennale) Teaching assistant (10 hours) for the following course: “Analisi 2”	COMO, ITALY
Oct. 2011-Jan. 2012	Università degli Studi dell’Insubria, Scienze dell’Ambiente e della Natura Teaching assistant (8 hours) for the following course:	COMO, ITALY

	“Matematica”	
Oct. 2011–Jan. 2012	Politecnico di Milano Ingegneria Meccanica e Aerospaziale Teaching assistant (48 hours) for the following course: “Analisi 1 e Geometria”	MILANO, ITALY
October 2009	Università degli Studi di Milano, Facoltà di Scienze MM.FF.NN. Teaching assistant (21 hours) for the MINIMAT course (remedial classes of Mathematics) addressed to freshman students of the Facoltà di Scienze MM. FF. NN. and of the 5 courses of the Biotechnology degree.	MILANO, ITALY
Oct. 2008–Jan. 2009	Università degli Studi di Cagliari Dipartimento di Matematica Teaching assistant (32 hours) for the following course: “Geometria 1”	CAGLIARI, ITALY

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FUNDING INFORMATION

2019-	Participant to the PRIN Project 2017 REAL AND COMPLEX MANIFOLDS: TOPOLOGY, GEOMETRY AND HOLOMORPHIC DYNAMICS Scientific coordinator: Prof. Filippo Bracci Coordinator of the local unity: Prof. Emilio Musso
2018	Recipient of the FFABR: ricercatori FONDO PER IL FINANZIAMENTO ATTIVITÀ BASE DI RICERCA FUNDED BY THE MIUR GRANT VALUE: 3.000 EU
2017-	Responsible for the STARTING GRANT PER GIOVANI RICERCATORI A TD A E B - I TRANCHE 2017 - IMPERA FUNDED BY THE POLITECNICO DI TORINO GRANT VALUE: 30.000 EU
2014-2015	Participant to the PRIN Project 2010-2011: VARIETÀ REALI E COMPLESSE: GEOMETRIA, TOPOLOGIA E ANALISI ARMONICA Scientific coordinator: Prof. Fulvio Ricci Coordinator of the local unity: Prof. Stefano Meda  Coordinator of the INdAM-GNAMPA Project 2014: PROPRIETÀ ANALITICHE E SPETTRALI DI VARIETÀ PESATE E APPLICAZIONI

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REFEREE ACTIVITY

Referee for: ANNALI DELL'UNIVERSITÀ DI FERRARA  
CALCULUS OF VARIATIONS AND PARTIAL DIFFERENTIAL EQUATIONS



COMMUNICATIONS IN CONTEMPORARY MATHEMATICS  
GEOMETRIAE DEDICATA  
JOURNAL OF GEOMETRIC ANALYSIS  
JOURNAL OF MATHEMATICAL ANALYSIS AND APPLICATIONS  
KODAI MATHEMATICAL JOURNAL  
THE ROYAL SOCIETY OF EDINBURGH, PROCEEDINGS SECTION A  
THE SCIENTIFIC WORLD JOURNAL

Reviewer for AMS Mathematical Reviews.

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#### ORGANIZATION OF SCIENTIFIC EVENTS

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Member of the organizing committee of the online workshop:  
DISCRETE HARMONIC ANALYSIS  
AND DIFFERENTIAL GEOMETRY DAYS  
September 24-25, 2020

Member of the organizing committee of the workshop:  
GEOMETRIC ANALYSIS, SUBMANIFOLDS  
AND GEOMETRY OF PDE'S  
Turin, Italy, September 9-13, 2019

Member of the organizing committee of the school:  
PLURIPOTENTIAL THEORY, GEOMETRIC ANALYSIS  
AND CALIBRATED GEOMETRY  
Turin, Italy, May 2-5, 2018

Member of the scientific committee of the workshop:  
COMPLEX AND RIEMANNIAN GEOMETRY DAYS  
Cagliari, Italy, September 8-9, 2016

Member of the organizing committee of the workshop:  
A GEOMETRY DAY IN COMO 2015  
Como, Italy, Jan 10, 2014  
Talks by: Z. Djadli, A. Malchiodi, L. Mari,  
B. Nelli, R. Paoletti.

Member of the organizing committee of the workshop:  
A GEOMETRY DAY IN COMO 2014  
Como, Italy, Jan 10, 2014  
Talks by: F. Bonsante, F. Coda-Marques, I. Holopainen, N. Gigli,  
C. Mantegazza, M. Rigoli.

Member of the organizing committee of the school:  
GEOMETRIC ANALYSIS ON RIEMANNIAN AND SINGULAR METRIC SPACES  
Como, Italy, Sept 30-Oct 5, 2013  
Mini-courses by: S. Alexander, G. Carron, E. Hebey, U. Lang, A. Neves  
Scientific Committee: G. Besson, S. Pigola, A. Setti, M. Troyanov.

Organizer of the workshop:  
A GEOMETRY DAY IN BICOCCA  
Como, Italy, Sept 27, 2013

OTHER ACTIVITIES

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Febr-June 2018

ATTENDANCE OF THE COURSE

*Apprendere ad insegnare nell'Higher Education*

Commitment: 40 hours.

Politecnico di Torino

LANGUAGE SKILLS

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Mother tongue: Italian.

Other languages: English, Spanish, French.

Torino, April 7, 2022