

# Luigi PROVENZANO

## PERSONAL DATA

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PLACE AND DATE OF BIRTH: Casarano (LECCE), Italy | May 4, 1987  
CITIZENSHIP: Italian  
ADDRESS: Chemin du Grammont 2, 1025 St.-Sulpice (VD), Switzerland  
PHONE: +41 766 434 373/+39 349 1324373  
EMAIL (PERSONAL): [luigiprovenz@gmail.com](mailto:luigiprovenz@gmail.com)  
WEB PAGE: [lprovenzano.altervista.org](http://lprovenzano.altervista.org)

## CURRENT POSITION

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JUL. 2016–AUG. 2017 | **Chercheur avancé** - PostDoc,  
SB MATH SCI-SB-JS, [SCI-SB-JS Group](#)  
EPFL - École Polytechnique Fédérale de Lausanne  
Office MA B3 514, Station 8 CH-1015 Lausanne (Switzerland)  
Email [luigi.provenzano@epfl.ch](mailto:luigi.provenzano@epfl.ch)

## PAST POSITIONS

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MAY 2016–JUN. 2016 | **Collaborateur Scientifique**  
*Institut de Mathématiques*, Université de Neuchâtel  
Neuchâtel (Switzerland)

JAN. 2013–DEC. 2015 | **Ph.D Student**  
*Dipartimento di Matematica*, Università degli Studi di Padova  
Padova (Italy)

## DEGREES AND DIPLOMAS

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JAN. 2013–DEC. 2015 | Ph.D in MATHEMATICS, **Università degli Studi di Padova**  
Judgement: “*excellent*”  
Supervisor: Prof. Pier Domenico LAMBERTI  
Ph.D thesis: “On mass distribution and concentration phenomena for linear elliptic partial differential operators”

JAN. 2010–MAR. 2012 | Master degree in MATHEMATICS  
Grade 110/110 “*cum laude*”, **Università degli Studi di Padova**  
Supervisor: Prof. Pier Domenico LAMBERTI  
Master thesis: “Eigenvalues of harmonic and poly-harmonic operators subject to mass density perturbations”

SEPT. 2006–DEC. 2009 | Bachelor degree in MATHEMATICS  
Grade 106/110, **Università degli Studi di Padova**  
Supervisor: Prof. Pier Domenico LAMBERTI  
Bachelor thesis: “Sulla dipendenza dello spettro di una membrana vibrante dalla densità di massa”

SEPT. 2001–JUN. 2006 | High school degree, **Liceo Scientifico “G. C. Vanini”**, Casarano (LECCE)  
Grade: 100/100 “*with merit*”.

## EXPERIENCES ABROAD

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OCT. 2014–JAN. 2015	Research period at the <b>Universidade de AVEIRO</b> , Portugal Ph.D exchange program, supervision of Prof. Matteo Dalla Riva.
MAY 2012–AUG. 2012	Research period at the <b>BCAM</b> of BILBAO, Spain ERC project NUMERIWAVES, supervision of Prof. Enrique Zuazua.
SEPT. 2010–JUN. 2011	Erasmus at <b>Université Denis Diderot-Paris 7</b> , PARIS, France.

### 5.1 Research interests

Mathematical Analysis: spectral perturbation problems, linear and nonlinear spectral theory, spectral geometry, shape optimization, function spaces, functional analysis, asymptotic analysis, partial differential equations.

## RESEARCH ACTIVITY

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Spectral perturbation problems for polyharmonic operators subject to homogeneous boundary conditions (Dirichlet, Neumann, Steklov, intermediate or mixed boundary conditions) with particular concern to problems of perturbation of mass density or shape. Mass concentration problems for second order operators (Neumann, Steklov) and asymptotic analysis. Shape optimization and isoperimetric inequalities for the eigenvalues of higher order elliptic operators. Bounds for eigenvalues of second and higher order operators on Euclidean spaces or manifolds. Inequalities for sums and Riesz-means of eigenvalues. Inequalities for Steklov eigenvalues.

### 6.1 Publications

#### PUBLICATIONS IN SCIENTIFIC JOURNALS

1. L. Provenzano, J. Stubbe, “Weyl-type bounds for Steklov eigenvalues”, to appear on the Journal of Spectral Theory (2017).
2. D. Buoso, L.M. Chasman, L. Provenzano, “On the stability of some isoperimetric inequalities for the fundamental tones of free plates”, to appear on the Journal of Spectral Theory (2017).
3. P.D. Lamberti, L. Provenzano, “Neumann to Steklov eigenvalues: asymptotic and monotonicity results”, Proceedings of the Royal Society of Edinburgh, Section: A Mathematics, Volume 147, Issue 2 (2017), 429–447.
4. L. Provenzano, “A note on the Neumann eigenvalues of the biharmonic operator”, Mathematical Methods in the Applied Sciences, doi:10.1002/mma.4063 (2016).
5. L. Andreis, D. Barbato, F. Collet, M. Formentin, L. Provenzano, “Strong existence and uniqueness of the stationary distribution for a stochastic inviscid dyadic model”, Nonlinearity, Volume 29, Issue 3 (2016), 1156–69.
6. D. Buoso, L. Provenzano, “A few shape optimization results for a biharmonic Steklov problem”, J. Differential Equations, Volume 259, Issue 5 (2015), 1778–1818.
7. P.D. Lamberti, L. Provenzano, “A maximum principle in spectral optimization problems for elliptic operators subject to mass density perturbations”, Eurasian Mathematical Journal, Volume 4, Issue 3 (2013), 70–83.

## PUBLICATIONS IN BOOKS AND PROCEEDINGS

8. D. Buoso, L. Provenzano, “*On the eigenvalues of a biharmonic Steklov problem*”, Integral Methods in Science and Engineering, Theoretical and Computational Advances, 81–89, Birkhäuser, (2015).
9. P.D. Lamberti, L. Provenzano, “*Viewing the Steklov eigenvalues of the Laplace operator as critical Neumann eigenvalues*”, Current Trends in Analysis and Its Applications, Proceedings of the 9th ISAAC Congress, Kraków 2013 171–178, Birkhäuser, Basel (2015).

## SUBMITTED PAPERS

10. B. Colbois, L. Provenzano, “*Eigenvalues of elliptic operators with density*” (2017).
11. M. Dalla Riva, L. Provenzano, “*On vibrating thin membranes with mass concentrated near the boundary: an asymptotic analysis*” (2017).

## ORGANIZATION OF CONFERENCES AND SEMINARS

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SEPT. 2016–JUN. 2017	<b>Organizer</b> of the cycle of seminars on the topic “SPECTRAL THEORY AND GEOMETRY”, EPFL
JUL. 25–29, 2016	<b>Assistant</b> in the organization of the “14th International Conference on Integral Methods in Science and Engineering (IMSE 2016)”, Padova (Italy)
Nov. 6–7, 2014	<b>Organizer</b> of the “Perturbation, Elliptic and Parabolic workshop”, Aveiro (Portugal)

## INVITED TALKS

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JUN. 20, 2017	Invited talk, Workshop on Geometric Spectral Theory, NEUCHÂTEL (Switzerland)
OCT. 4, 2016	Invited seminar, Université Paris 13, PARIS (France)
JAN. 13, 2016	Invited seminar, Université de Neuchâtel, NEUCHÂTEL (Switzerland)
JUL. 3, 2015	Invited seminar, Politecnico di Torino, TORINO (Italy)

## CONFERENCE TALKS

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JUN. 19–23, 2017	Workshop on Geometric Spectral Theory, NEUCHÂTEL (Switzerland)
JUN. 12–16, 2017	Mini-Courses in Mathematical Analysis, PADOVA (Italy)
JUN. 27–JULY 01, 2016	Mini-Courses in Mathematical Analysis, PADOVA (Italy)
FEB. 8–12, 2016	School and Workshop PDEs and Applications, NAPOLI (Italy)
AUG. 30–SEPT. 1, 2015	Modern Mathematical Methods in Science and Technology (M3ST) 2015, KALAMATA (Greece)
JUL. 6–10, 2015	EquaDiff 2015, LYON (France)
NOV. 6–7, 2014	Perturbation, Elliptic and Parabolic workshop, AVEIRO (Portugal)
OCT. 3–5, 2014	5th Iberian Mathematical Meeting, AVEIRO (Portugal)
JUL. 21–25, 2014	IMSE 2014, KARLSRUHE (Germany)
AUG. 5–10, 2013	Isaac 9th Congress KRAKOW (Poland)

## TEACHING ACTIVITY

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A.A. 2016–2017	Assistant for the course “ <b>Analyse Avancée I et II</b> ” EPFL, Bachelor in Physics (fall and spring semester).
A.A. 2015–2016	Teaching assistant for the course “ <b>Analisi Matematica 1</b> ” Università degli Studi di Padova, Bachelor in Mathematics.
A.A. 2015–2016	Teacher of the “ <b>Precorso di Calcolo</b> ” MOOC of the University of Padova on the platform <i>Iversity</i> .
A.A. 2014–2015	Professor of the course “ <b>Precorso di Matematica</b> ” Università degli Studi di Padova, Bachelor in Statistics (first semester).
A.A. 2013–2014	Teaching assistant for the course “ <b>Analisi Matematica 2</b> ” Università degli Studi di Padova, Bachelor in Mathematics (second semester).
1 E 8 APR. 2016 8 E 15 MAG. 2015	Teacher of the mini-courses “ <b>Introduzione a Matematica</b> ” Università degli Studi di Padova Bachelor in Physics and Astronomy.
2012–2015	Other non-scheduled teaching assistance activities Università degli Studi di Padova, Bachelor in Physics, Astronomy and Mechanic and Aerospace Engineering.

## LANGUAGES

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ITALIAN:	mother tongue
ENGLISH:	fluent
FRENCH:	fluent
SPANISH:	basic
PORTUGUESE:	basic

Updated June 07, 2017.

Il sottoscritto Luigi Provenzano, ai sensi del Dlgs 196/03, autorizza espressamente l'utilizzo dei dati personali e professionali riportati nel curriculum. Il sottoscritto Luigi Provenzano, consapevole che chiunque rilascia dichiarazioni mendaci è punito ai sensi del codice penale e delle leggi speciali in materia, ai sensi degli artt. 46 e 47 del D.P.R. 28 Dicembre 2000, n.445 e successive modificazioni e integrazioni, dichiara che quanto riportato nel presente curriculum corrisponde a verità.