

IL PRESENTE ALLEGATO COSTITUISCE UNO SCHEMA-TIPO, NEL QUALE SONO INDICATE ALCUNE VOCI A MERO TITOLO ESEMPLIFICATIVO, PERTANTO PUO' ESSERE MODIFICATO/INTEGRATO DAL CANDIDATO ADATTANDOLO ALLE PECULIARITÀ DELLA PROPRIA ATTIVITÀ SCIENTIFICO-PROFESSIONALE

ALL. B

Decreto Rettore Università di Roma "La Sapienza" n 1828/2018 del 12/07/2018

Francesco Bei
Curriculum Vitae

Place: Cantiano (PU)

Date: 27/08/1985

Part I – General Information

Full Name	Francesco Bei
Date of Birth	
Place of Birth	
Citizenship	Italian
Permanent Address	
Mobile Phone Number	
E-mail	
Spoken Languages	Italian, english, french

Part II – Education

- PhD in Mathematics
- Dipartimento di Matematica, Sapienza Università di Roma
- Advisor: Prof. Paolo Piazza
- Thesis: L2-de Rham-Hodge and L2-Atiyah-Bott-Lefschetz theorems on stratified pseudomanifolds
- Thesis defense: 17 December 2012
- Master in Mathematics
- Università degli studi di Perugia, 17/07/2009
- Advisor: Prof. Alessandro Tancredi

- Thesis: On the algebraic approximation of smooth manifolds by real algebraic varieties
- Final grade: 110/110 cum laude
- Degree in Mathematics
- Università degli studi di Perugia, 19/09/2007
- Advisor: Prof. Lucio Guerra
- Thesis: The Riemann-Roch theorem
- Final grade: 110/110 cum laude

Part III – Appointments

IIIA – Academic Appointments

- 03 January 2017–02 January 2019. Postdoc "Labex Mylioni" Université de Lyon at the Institute Camille Jordan, Université de Lyon 1, under the supervision of Denis Perrot.
- 15 March 2013–31 December 2016. Postdoc at the Mathematics department of the Humboldt-Universität zu Berlin. I was a member of the group "Geometric Analysis and Spectral Theory" under the direction of prof. Jochen Brüning.

IIIB – Other Appointments

Start	End	Institution	Position

Part IV – Teaching experience

- Academic year 2017/2018, first semester. Exercise classes (in french) for the course Statistiques, 30 hours, Université Claude Bernard Lyon 1.
- Academic year 2017/2018, second semester. Exercise classes (in french) for the course Analyse pour l'économie 2, 36 hours, Université Claude Bernard Lyon 1.

Part V - Society memberships, Awards and Honors

Year	Title
2013-2016	Member of research program of the Deutsche Forschungsgemeinschaft (DFG): "SFB 647: Raum - Zeit – Materie. Differential Operators of Mathematical Physics - Spectral Theory and Dynamics".
Since 2015	Reviewer for Mathscinet
Since 2011	Member of the research group "INdAM - GNSAGA Gruppo Nazionale per le Strutture Algebriche, Geometriche e le loro Applicazioni."
On February 3 rd 2016	I obtained the "qualification" concerning the possibility to apply for a position of "maître des conférences" within the French academic system

Part VI - Funding Information [grants as PI-principal investigator or I-investigator]

Year	Title	Program	Grant value

Part VII – Research Activities

Keywords	Brief Description
Stratified spaces	My research interests are devoted to various questions of global analysis on singular spaces such as Thom-Mather stratified pseudomanifolds and complex projective varieties. I am particularly interested in the spectral theory, L^2 -cohomology and L^2 -Hodge theory associated to various families of Riemannian/Hermitian metrics, such as iterated conic metrics and the Fubini-Study metric, carried by the regular part of these spaces. I am also very interested in the possible geometric/topological interpretations of the above invariants, which typically involve intersection cohomology, cohomology of some resolution and K-homology.
Complex projective varieties	
L^2 -cohomology	
L^2 -Hodge theory, spectral theory	
Intersection cohomology, K-homology	

Part VIII – Summary of Scientific Achievements

Product type	Number	Data Base	Start	End
Papers [international]	9	Scopus and Web of Sciences	2013	2018
Papers [national]				
Books [scientific]				
Books [teaching]				

Total Impact factor	10.155
Total Citations	24
Average Citations per Product	2.67
Hirsch (H) index	3
Normalized H index*	0.5

*H index divided by the academic seniority.

Part IX– Selected Publications

List of the publications selected for the evaluation. For each publication report title, authors, reference data, journal IF (if applicable), citations, press/media release (if any).

1. Tesi di Dottorato. L^2 -de Rham-Hodge and L^2 -Atiyah-Bott-Lefschetz theorems on stratified pseudomanifolds.

2. The L^2 -Atiyah-Bott-Lefschetz theorem on manifolds with conical singularities. A heat kernel approach. *Annals of Global Analysis and Geometry*, vol. 44, no. 4, 2013, 565–605. ISSN: 0232-704X, doi: 10.1007/s10455-013-9382-0. IF 0.794. Citations: 4 (Scopus), 4 (Web of Sciences).

3. General perversities and L^2 de Rham and Hodge theorems for stratified pseudomanifolds. *Bulletin des Sciences Mathématiques*, vol. 138, no. 1, 2014, 2–40. ISSN: 0007-4497, doi: 10.1016/j.bulsci.2013.10.001. IF 1.19. Citations: 9 (Scopus), 9 (Web of Sciences).

4. Poincaré duality, Hilbert complexes and geometric applications. *Advances in Mathematics*, vol. 267, 2014, 121–175. ISSN: 0001-8708, doi: 10.1016/j.aim.2014.09.002. IF 1.294. Citations: 6 (Scopus), 6 (Web of Sciences).

5. On the space of connections having non-trivial twisted harmonic spinors. Con Nils Waterstraat. *Journal of Mathematical Physics*, vol. 56, no. 9, 2015. ISSN: 0022-2488, doi: 10.1063/1.4931368. IF 1.234. Citations: 0 (Scopus), 0 (Web of Sciences).

6. On the L^2 -Poincaré duality for incomplete riemannian manifolds: a general construction with applications. *Journal of Topology and Analysis*, vol. 8, no. 1, 2016, 151–186. ISSN: 1793-5253, doi: 10.1142/S1793525316500060. IF 0.783. Citations: 0 (Scopus), 0 (Web of Sciences).

7. Scattering theory for the Hodge Laplacian under a conformal perturbation. Con Batu Güneysu e Jörn Müller. *Journal of Spectral Theory*, vol. 7, no. 1, 2017, 235–267. ISSN: 1664-039X, doi:10.4171/JST/162. IF 0.844. Citations: 0 (Scopus), 0 (Web of Sciences).

8. Sobolev spaces and Bochner Laplacian on complex projective varieties and stratified pseudomanifolds. *Journal of Geometric Analysis*, vol. 27, no. 1, 2017, 746–796. ISSN: 1050-6926, doi: 10.1007/s12220-016-9697-8. IF 0.996. Citations 2 (Scopus), 2 (Web of Sciences)

9. q -parabolicity of stratified pseudomanifolds and other singular spaces. Con Batu Güneysu.

Annals of Global Analysis and Geometry, vol. 51, no. 3, 2017, 267–286. ISSN: 0232-704X, doi: 10.1007/s10455-016-9534-0. IF 0.774. Citations 3 (Scopus), 3 (Web Of Sciences).

10. Degenerating Hermitian metrics and spectral geometry of the canonical bundle. *Advances in Mathematics*, vol. 328, 2018, 750–800. ISSN: 0001-8708, doi: 10.1016/j.aim.2018.01.021. IF 1.372. Citations: 0 (Scopus), 0 (Web of Sciences).

11. On the L^2 -Dolbeault-cohomology of certain complete Kähler metrics. Con Paolo Piazza. Accettato per la pubblicazione su *Mathematische Zeitschrift*. Disponibile al seguente sito: <https://link.springer.com/article/10.1007/s00209-017-2029-2>. ISSN: 0025-5874, doi: 10.1007/s00209-017-2029-2. IF 0.874. Citations: 0 (Scopus).

12. Von Neumann dimension, Hodge index theorem and geometric applications. Accettato per la pubblicazione su *European Journal of Mathematics*. DOI: 10.1007/s40879-018-0269-2. Versione online disponibile al seguente sito: <https://link.springer.com/article/10.1007/s40879-018-0269-2>

Part X-Other Publications

- Geometric Analysis on Singular Spaces (with Jochen Brüning, Batu Güneysu Matthias Ludewig; 68 pages). Chapter of the book "Space - Time - Matter: Analytic and Geometric Structures (SFB 647)", De Gruyter Verlag, 2018. ISBN 978-3-11-045215-0.

Part XI-Preprints

- On the Laplace-Beltrami operator on compact complex spaces. Submitted. Available at the following link: <https://arxiv.org/abs/1706.05962>.
- Kac regular sets and Sobolev spaces in geometry, probability and quantum physics. With Batu Güneysu. Submitted. Available at the following link: <https://arxiv.org/abs/1708.05542>.
- A note on analytic Todd classes on singular varieties. With Paolo Piazza. In preparation.
- On the L^p -cohomology of q -parabolic Kähler manifolds. In preparation.

Part XII-Summer schools and Congress

- SMI (Scuola Matematica Interuniversitaria), July-August 2009, Perugia, Italy.
- Ricci flow and geometric applications (summer school organized by C.I.M.E. foundation), 28 June 2010–03 July 2010, Cetraro (CS), Italy.
- Seminal interactions between mathematics and Physics, September 22–25 2010, Accademia Nazionale dei Lincei, Rome, Italy.
- Analysis and topology in interactions 2011, June 06–11 2011, Cortona, Italy.
- Higher codimensional elliptic boundary problems, April 12–14 2012, Fayetteville (Arkansas), U.S.A.

- Analysis and geometric singularities, May 07–11 2012, Oberwolfach, Germany.
- Noncommutative geometry, index theory and applications, June 11–15 2012, Cortona, Italy.
- Singular Analysis, September 19–21 2012, Carl-Von-Ossietzky Universität Oldenburg, Germany.
- Geometric Analysis, Graduate Summer School of the PCMI, June 30–July 20 2013, Park City, Utah.
- Geometric Structure and Spectral Invariants, May 16–19 2014, Berlin, Germany.
- Analysis and Topology in Interaction 2014, June 16–21 2014, Cortona, Italy.
- New Trends in Differential Geometry 2014, September 18–20, Villasimius, Italy.
- Geometric and Singular Analysis, February 09–13 2015, Potsdam, Germany.
- Geometric and Computational Spectral Theory, June 15–26, 2015, Montréal, Canada.
- Geometric and Singular Analysis, March 07–11 2016, Potsdam, Germany.
- Analysis, Geometry and Topology of Stratified Spaces, June 13–17 2016, CIRM, Luminy, France.
- Workshop on Stratified Spaces: Perspectives from Analysis, Geometry and Topology, August 22–26, 2016, The Fields Institute, Toronto, Canada.
- Algebraic Geometry and Representation Theory in Rome, 22 December 2016, Rome, Italy.
- Index Theory and Singular Structures, May 29–June 02 2017, Institute de Mathématiques de Toulouse, Toulouse, France.
- The Sen Conjecture and Beyond, June 19–23 2017, University College London, London, UK.
- Analysis and Topology in Interaction 2017, June 26–July 01 2017, Cortona, Italy.
- Loop Spaces, Supersymmetry and Index Theory, July 17–21 2017, Chern Institute of Mathematics, Tianjin, China.
- Geometric and Singular Analysis, February 19–23 2018, Potsdam, Germany.
- Giornate di geometria algebrica e argomenti correlati XIV, 29/05/2018–01/06/2018, Università degli studi di Genova, Genova, Italy.

Part XIII-Talks

- Department of Mathematics, University of Illinois at Urbana-Champaign, April 2012.

- Department of Mathematics, Sapienza Università di Roma, November 2012.
- Department of Mathematics, Loughborough University, September 2013.
- Department of Mathematics, Humboldt Universität zu Berlin, March 2014.
- Department of Mathematics, UQAM Montréal, April 2014.
- Conference Analysis and Topology in Interactions 2014, 18 June 2014, Cortona, Italy.
- Department of Mathematics, Universität Potsdam, July 2014.
- Conference Geometric and Singular Analysis, 12 February 2015, Potsdam, Germany.
- Joint Seminar on Complex Algebraic Geometry and Complex Analysis (Bochum - Duisburg-Essen - Wuppertal), 27 November 2015, Wuppertal, Germany.
- Fakultät für Mathematik, Universität Regensburg, 21 January 2016, Regensburg, Germany.
- Conference "Geometric and Singular Analysis", March 07–11 2016, Potsdam, Germany.
- Conference "Analysis, Geometry and Topology of Stratified Spaces", June 13–17 2016, CIRM, Luminy, France.
- Workshop on Stratified Spaces: Perspectives from Analysis, Geometry and Topology, August 22–26, 2016, The Fields Institute, Toronto, Canada.
- Conference "Algebraic Geometry and Representation Theory in Rome", 22 December 2016, Rome, Italy.
- Conference "Index Theory and Singular Structures", May 29–June 02 2017, Institute de Mathématiques de Toulouse, Toulouse, France.
- Conference "The Sen Conjecture and Beyond", June 19–23 2017, University College London, London, UK.
- Conference "Loop Spaces, Supersymmetry and Index Theory", July 17–21 2017, Chern Institute of Mathematics, Tianjin, China.
- Conference "Geometric and Singular Analysis", February 19–23 2018, Potsdam, Germany.
- Giornate di geometria algebrica e argomenti correlati XIV, 29/05/2018–01/06/2018, Università degli studi di Genova, Genova, Italy.

Part XIV-Visits

- 15 March 2012–30 April 2012, University of Illinois at Urbana-Champaign, invited by Pierre Albin.
- 3 September 2012–18 September 2012, Loughborough University, invited by Eugenie

Hunsicker.

- 2 September 2013–13 September 2013, Loughborough University, invited by Eugenie Hunsicker.
- 29 March 2014–12 April 2014, UQAM Montréal , invited by Frédéric Rochon.
- 23 March 2015–1 April 2015, Sapienza Università di Roma, invited by Paolo Piazza.
- 14 September 2015–25 September 2015, Sapienza Università di Roma, invited by Paolo Piazza.
- 12 September 2016–16 September 2016, Sapienza Università di Roma, invited by Paolo Piazza.

Part XV-Languages

Italian: mother tongue

English: fluent

French: medium level

CANTIANO, 27/08/2018

Henricus M.