Curriculum Vitæ of Stefano Francaviglia

31st January 2012

Personal Informations

Name:	Stefano Francaviglia
Born in:	Pistoia (Italy), August 19, 1973
Nationality:	Italian
Address:	Dipartimento di Matematica Università di Bologna P.zza Porta S. Donato 5, 40126 Bologna, Italy
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Languages known:	Catalan, English, French, Italian, Portuguese, Spanish
Research fields:	Geometry and Topology of low-dimensional manifolds. Geometric Group Theory.

Positions and Titles

2008 November, 1 - today. Researcher Professor at the Dept. of Math. of the University of Bologna.

2007 Feb - 2008 October. Research fellow at the Dept. of Appl. Math. of the University of Pisa.

2005 Feb - 2007 Jan. *Marie Curie Intra European Fellowship* at the Dept. of Math. of the Universitat Autònoma de Barcelona.

2004 May, 21. PhD in Mathematics at the Scuola Normale Superiore of Pisa, approved *cum laude*[1]; Thesis: *Hyperbolicity equations for cusped* 3*-manifolds and volume-rigidity of representations*; advisor: Prof. Carlo Petronio (Dept. Appl. Math. Univ. Pisa).

[1] Jury: Prof. Giuseppe Tomassini (SNS Pisa) President; Prof. Riccardo Benedetti (Pisa Univ.), Prof. Paolo Lisca (Pisa Univ.), Prof. Wolfgang Metzler (Frankfurt Univ.), Prof. Bernard Perron

2003 Jul - 2005 Feb. Research fellowship at the Dept. of App. Math. of the University of Pisa.

2003 Jan - June. Visiting student of the C.R.M. de Barcelona, as a participant of the European Project *Marie Curie training site*.

2002 March - June. Visiting student of the Universitat Autònoma de Barcelona, under the direction of Prof. Joan Porti (Univ. Aut. Barcelona), as a participant of the European Project *Complex Analysis and Analytic Geometry* (CHRXCT 980163).

1999 - 2001. PhD student at the Scuola Normale Superiore of Pisa.

1993 - 1998. Degree in Mathematics at the Dept. Math. of the University of Pisa, approved *cum laude*; Thesis: *Foliations on 3-manifolds*, advisor: Prof. Riccardo Benedetti (Dept. Math. Univ. Pisa).

Research projects and grants

2011-2014 *Geometria e topologia delle varietà in bassa dimensione.* Type: FIRB (code RBFR10GHHH) Italian National Grant for Young Research Teams. Role: Researcher. National team-leader: Dr. Bruno Martelli (Univ. of Pisa). Amount 610.000 Euros.

2009-2010. *Geometria di gruppi e varietà.* Type: Azione integrata Italia-Spagna. Role: Researcher. Scientific advisors: Prof. Carlo Petronio (Univ. Pisa) and Prof. Joan Porti (UAB, Bellaterra, Sp). Amount: 22.560 Euros.

02/2007 - 01/2008. *Geometry of Groups and Manifolds.* Type: Marie Curie Reintegration Grant. Role: Principal Researcher. Amount: 40.000 Euros.

01/2003 - 12/2003. *Flussi di metriche e convergenze di Varietà.* Type: INdAM Project. Role: Researcher. Principal researcher: Prof. Carlo Petronio. Amount: 12.000 Euros.

(Univ. de Bourgogne), Prof. Carlo Petronio (Pisa Univ.), Prof. Bruno Zimmermann (Trieste Univ.).

Thesis referees: Prof. Jean-Pierre Otal (ENS Lyon), Prof. Carlo Petronio (Pisa Univ.), Prof. Joan Porti (UAB Barcelona).

Teaching

2011-2012 Courses “Geometry 1”, “Geometry 2” and “Geometria superiore” (1rst, 2nd, and 5ft year of degree and specialistic degree in mathematics) and a course of general mathematics (degree in Informatics for management). Univ. of Bologna.

2010-2011 Master course (5th year of specialistic degree in mathematics) of Riemannian Geometry. Univ. of Bologna.

2010-2011 Master course (4th year of specialistic degree in mathematics) of differential forms and co-homology. Univ. of Bologna.

2009-2010 Master course (5th year of specialistic degree in mathematics) of Riemannian Geometry. Univ. of Bologna.

2009-2010 Master course (4th year of specialistic degree in mathematics) of differential forms and co-homology. Univ. of Bologna.

2008-2009. Degree course of geometry (first year of degree in mathematics) Univ. of Bologna.

2008. Doctorate minicourse (7 lectures) of hyperbolic geometry at the UFF of Niterói (RJ, BR.)

2008. Complementary teaching activity at the Faculty of engeenering of te Univesity of Pisa (general mathematics.)

2004. Tutor of geometry at the Polo Universitario dell’Università di Pisa nella Casa Circondariale Don Bosco (Prison of Pisa.)

1999-2003. Degree courses of Analysis, Geometry and Algebra, as assistant teacher of: Prof. Marco Forti (Dept. App. Math, Univ. of Pisa), Prof. Sebastiano Francaviglia (Dept. App. Math, Univ. of Pisa), Prof. Mariano Giaquinta (Scuola Normale Superiore, Pisa), Prof. Carlo Mantagazza (Scuola Normale Superiore, Pisa), Prof. Carlo Petronio (Dept. App. Math, Univ. of Pisa.)

2001. Collaboration to stages for undergraduate students organized by U.M.I. for the project “Italian Math Olympic games”.

Short stays in research centers

15/11/2011 - 19/11/2011 Universitè Paris Sud (Orsay, FR)

31/10/2010 - 01/03/2011. UFF (Niterói, Rio de Janeiro, BR)

06/09/2009 - 28/02/2010. UFF (Niterói, Rio de Janeiro, BR)

2009, 08-14/03. Southampton University (UK)

2009, 03/02-03/03. UFF (Niterói, Rio de Janeiro, BR)

2008, 01-31/08. UFF (Niterói, Rio de Janeiro, BR)

2008, 08-21/06. Guest — research in pairs — at the C.R.M. de Barcelona (Spain)

2008, 25/02-25/03. Laboratoire Emile Picard, Université de Toulouse (France)

2008, 07-30/01. IMPA (Rio de Janeiro, BR) and UFF (Niterói, BR)

2007, 21/11-12/12. Dept. of Math. of UAB (Spain)

2007, 15-25/10. Dept. of Math. of UAB (Spain)

2007, 26/07-03/08. Dept. of Math. of UAB (Spain)

2007, 25/06-05/07. Dept. of Math. of UAB (Spain)

2007, 02-13/05. Dept. of Math. of UAB (Spain)

2007, 26/03-12/04. Dept. of Math. of UAB (Spain)

2007, 11-22/03. Laboratoire Emile Picard, Université de Toulouse (France)

2007, 04/02-03/03. CIRM of Luminy (Marseille, France)

2006, 31/10-05/11. Dept. of Math. Univ. of Utah (Salt Lake City, Utah, USA)

2006, 23-30/10. Dept. of Math. of The Univ. of Texas at Austin (Texas, USA)

2006, 09-22/10. The Ohio State University (Columbus, OH, USA)

2006, 18-28/04. Institut Fourier, Université de Grenoble (FR)

2005, 02-07/05. Laboratoire Emile Picard, Université de Toulouse (FR)

2005, 06-13/03. ETH of Zurich (CH)

2004, 10/03-01/04. Dept of Math. Universitat Autònoma de Barcelona (SP)

2004, 28/01-01/02. Dept. of Math. of UQAM (Montreal, Quebec)

2004, 16-28/01. Courant Institute of Mathematical Sciences (New York, USA)

Conferences attended

Active participations

2011, February 21 - 25 *TopDin 2011. Workshop em Topologia e Dinâmica* (UFF, Niteroi, BR.) **Invited Speaker.**

2011, Jan-Feb *Grupo de Trabalho "Espaço de Teichmüller e metrica de Weil-Petersson"* (UFF, Niterói, BR)

2010, January 18 - 22 *TopDin 2010. Workshop em Topologia e Dinâmica* (UFF, Niteroi, BR.) **Invited Speaker.**

2008, June 1 - 7. *UltraMath 2008, Applications of Ultrafilters and Ultraproducts in Mathematics* (Pisa, IT.) **Speaker.**

2007, March 7 - 13. *Représentations de groupes de surfaces et géomeétrie en dimension 3* (Toulouse, Fr.) **Invited Speaker.**

2007, February 12 - 16. *Géométrie des groupes, semaine 2: Outre espace et espace de Teichmüller* (C.I.R.M. Lumniy, Fr.) **Invited Speaker.**

2006, June 6 - 9. *Atelier: Automorphismes et Substitutions* (Marseille, FR.) **Invited Speaker**.

2006, May 22 - June 2. *Knots, Groups and* 3*-manifolds in Marseille* (Marseille, FR.) **Speaker**.

2005, March 14 - 19. *Conference on bounded cohomology, harmonic maps and Higgs bundles* (Strabourg, FR and Basel, CH.) **Main Speaker**.

2004, September 27 - October 1. *Progressi Recenti in Geometria Reale e Complessa* (Levico Terme, Trento IT.) **Speaker**.

Other participations

2011, 28 June - 1 July *Recent advances in Geometric Group Theory* (Univ. of Southampton, UK)

2010, 2-7 August *Geometry topology and dynamics in negative curvature* (Raman Research Institute, Bangalore, India)

2010, 5-9 July *Quantum geometry and topology* (C.I.R.M., Luminy, FR)

2010, 28 June - 3 July *Teichmüller Theory and its Interactions in Mathematics and Physics* (C.R.M. Bellaterra, SP)

2010, 21-25 giugno *Vogtmann fest* (C.I.R.M. Luminy, FR)

2009, 1-5 June *Des groupes de tresses aux espaces de Teichmuller* (CIRM Luminy, FR)

2009, February 9 - 13. *Topologia e Dinâmica* (UFF, Niteroi, BR)

2009, February 4 - 19. *Grupo de Trabalho Uniformização para Folheações por Curvas* (UFF, Niteroi, BR)

2008, July 7-12. CIME course *Holomorphic Dynamical Systems* (Cetraro, Cosenza, IT)

2007, November 12-16. *Topics in Teichmuller Theory and Kleinian Groups* (MSRI, Berkeley, CA, USA)

2007, November 05-09. *Topics in Geometric Group Theory* (MSRI, Berkeley, CA, USA)

2007, July 16-20. *Hyperbolic structures on 3-manifolds and large scale geometry of Teichmüller space* (Warwick, UK)

2007, July 13-14. *David Epstein 70th Birthday Celebration* (Warwick, UK)

2007, July 9-12. *3-manifold geometry and topology* (Warwick, UK)

2007, May 20-26. *Braids and their ramifications* (Cortona, It)

2007, May 4-5. *Second Barcelona Weekend in Group Theory* (Barcelona, Sp.)

2007, February 26 - March 2. *Géométrie des groupes, semaine 4: Aspects combinatoires, algorithmiques et cryptographiques* (C.I.R.M. Lumniy, Marseille FR)

2007, February 19-23. *Géométrie des groupes, semaine 3: Aspects d'hyperbolicité, groupes de convergence* (C.I.R.M. Lumniy, Marseille FR)

2007, February 5-9. *Géométrie des groupes, semaine 1: Marches aléatoires sur les groupes* (C.I.R.M. Lumniy, Marseille FR)

2006, October 27-29. *Texas Geometry and Topology Conference* (Houston, Texas, USA)

2006, September 4-8. *Groups in Geometry and Topology* (Malaga, ES)

2006, August 22-30. *ICM Madrid 2006* (Madrid, ES)

2006, March 13-17. *Workshop on* 3*-manifolds after Perelman* (Edinburgh, UK)

2005, December 7-9. *Trois juournées de topologie à Orsay* (Orsay, FR)

2005, June 6-24. *Summer school and Conference on Geometry and Topology of 3-Manifolds* (Trieste, IT)

2005, April 8-9. *XI Encuentro de Topología* (Puerto de la Cruz, SP)

2005, February 23-26. *Workshop on 3-manifolds and complexity* (Cortona, IT)

2004, August 9-11. *Workshop on Three-Dimensional Geometry and Topology* (Oxford, UK)

2004, July 12-15. *Premier congrès Canada-France des sciences mathématiques* (Toulouse, FR)

2004, June 14 - July 2. *Non-positively curved geometries, discrete groups and rigidities* (Grenoble, FR)

2004, March 12-13. *XI Encuentro de Topología* (Barcelona, SP)

2003, August 3-8. *Spaces of Kleinian Groups and Hyperbolic* 3*-Manifolds* (Cambridge, UK)

2003, May 1-3. *X Encuentro de Topología* (Bilbao, SP)

2002, September 12-20. *Advanced Course on Geometric 3-Manifolds* (Barcelona, SP)

2002, June 19-22. *Braids in Cortona* (Cortona, IT)

2002, June 15-17. *The Topology of 3-manifolds* (Pisa, IT)

2002, June 12-16. *First Joint Meeting AMS-UMI* (Pisa, IT)

2001, June 3-9. *Perspectives in Low Dimensional Geometry* (Cortona, IT)

2000, May 29 - June 9. *Foliations: Geometry and Dynamics* (Warsaw, POL)

1999, June 25 - July 9. *Invariants de noeuds et de varietes de dimension 3* (Grenoble, FR)

1999, June 21-24. *Topologie en petite et grande dimension* (Orsay, FR)

1999, June 16-19. *The Joint Conference of the 5th Barcelona Logic Meeting and the 6th Kurt Gödel Colloquium* (Barcelona)

Talks given

2011, June 1. "Strutture proiettive ramificate su superfici" (Univ. of Pisa)

2011, May 27. "Curvatura negativa su spazi metrici" (Talk series "Topics in mathematics", Univ. of Bologna)

2011, May 4. "Il teorema di Royden per l'outer space" (La Sapienza, Roma)

2011, February 21. "Triangulaçoes, norma de Gromov e conjetura de Ehrenpreis" (invited talk at the conference "TopDin 2011. Workshop em topologia e dinamica", UFF, Niterói, RJ Brasil)

2010, July 1. "The Royden theorem for outer space" (UAB, Barcelona, SP)

2010, May 5. "L'outer space di un gruppo libero" (Univ. of Pisa)

2010, February 4. "Rigidez e deformaçõeis de variedades hiperbólicas" (UFBA, Salvador de Bahia, BA, BR)

2010, January 21. "Isomorphisms of good spaces and good spaces for groups" (invited talk at the conference "TopDin 2010. Workshop de topologia e dinamica", UFF, Niterói, RJ BR)

2009, November 19. "Hyperbolic volume of representations and Fuchsian groups" (DMat UFPE, Recife, PE, BR)

2009, October 23. "Deformations of hyperbolic manifolds in higher dimensional hyperbolic spaces" (Seminario de Topologia UFF-PUc, Niterói, RJ, BR)

2009, May 11. "Le group d'isométries de l'Outre Espace d'un groupe libre." (Séminaire d'Algèbre, Dynamique et Topologie — Univ. Marseille, Fr.)

2009, March 13. "Asymptotic cones for CAT(0)-spaces. Flats and geometric rank." (University of Southampton, UK)

2008, June 7. "Asymptotic cones of metric spaces and related topics" (talk at the conference "Ultramath 2008, Applications of Ultrafilters and Ultraproducts in Mathematics"; Pisa, It)

2008, May 7. "Azioni di gruppi su oggetti iperbolici" (Univ. di Bologna, It)

2008, April 11. "Proprietées métriques de l'Outre-espace" (Seminaire Darboux, Montpellier, Fr)

2008, February 26. "Rigidité des noeuds de deux ponts dans $SO(4,1)$" (Laboratoire Emile Picard, Université Paul Sabatier, Toulouse, FR)

2008, February 19. "Rigidità di complementari di nodi a due ponti in $\mathbb{H}^4$" (Univ. of Pisa)

2008, January 28. "Asymptotic cones of non-positively curved manifolds: From ultra-flats to flats" (UFF, Niterói, BR)

2008, January 18. "Metric properties of Outer Space" (UFF, Niterói, BR)

2008, January 15. "Representations of fundamental groups of hyperbolic manifolds" (IMPA, Rio de Janeiro, BR)

2007, October 24. "the Weil-Petersson metric on Outer Space" (C.R.M. Barcelona)

2007, March 26. "A metric on Outer space." (C.R.M. Barcelona)

2007, March 12. "From ultralfats to flats, a characterisation of symmetric spaces via their asymptotic cones." Invited talk at the workshop "Représentations de groupes de surfaces et géométrie en dimension 3" (Toulouse, Fr.)

2007, February 13. "A distance on Outer space." Invited talk at the conference *Outerspace and Teichmüller space* (Luminy, Marseille, Fr.)

2006, November 1. "Length of automorphisms of free groups." Department of Mathematics University of Utah (Salt LAke City, UT, USA)

2006, October 27. "Generic stretching factor of automorphisms of free groups." Department of Mathematics, The University of Texas at Austin (Austin, TX, USA)

2006, October 11. "Geodesic currents on free groups" Department of Mathematics, The Ohio State University (Columbus, OH, USA)

2006, June 9. "Compacité des automorphismes de longueur borneé" (Talk at the *Atelier: Automorphismes et Substitutions*, Marseille, FR)

2006, May 22. "Length compactness for automorphisms of free groups" (Talk at the conference *Knots, Groups and* 3*-manifolds in Marseille*, Marseille, FR)

2006, April 27. "Courants géodśiques sur groupes libres" Institut Fourier, Université de Grenoble (FR)

2005, May 3. "Existence and uniqueness of measurable Cannon-Thurston maps" Lab. Emile Picard, Unicersité Paul Sabatier (Toulouse, FR)

2005, April 15. Talk at the Seminar of Geometry of the Dept. of Math. of the Univ. de Barcelona (UB Barcelona, SP).

2005, March 19. "Volume of representations and rigidity" (Talk at the *Conference on bounded cohomology, harmonic maps and Higgs bundles*, Strabourg, FR and Basel, CH)

2004, September 30. "Rigidità di rappresentazioni Fuchsiane" (Talk at the conference *Progressi Recenti in Geometria Reale e Complessa*, Levico Terme, IT)

2004, May 4. "Discrete groups, harmonic measures and equivariant maps II" Dept. of Math. Univ. of Pisa (IT)

2004, April 28. "Discrete groups, harmonic measures and equivariant maps I" Dept. of Math. Univ. of Pisa (IT)

2004, March, 19. "Medidas equivariantes para representaciones de grupos fundamentales de 3-variedades" UAB, Barcelona (SP)

2004, January, 29. "Constructing natural maps for representations" Dept. of Math. UQAM Montreal (Quebec)

2003, November, 4 "Volume of representations and rigidity." Dept of Math. of Univ. of Pisa (IT)

2003, October, 28. "Volume of representations of fundamental groups of cusped 3-manifolds" Dept. of Math. of Univ. of Pisa (IT)

2003, June, 16. "Hyperbolic volume of representations of fundamen,tal groups of 3-manifolds" CRM, Barcelona (SP)

2003, January, 8. "Algebraic and Geometric solutions of compatibility and completeness equations" Dept. of Math. of Univ. of Pisa (IT)

Scientific Activities

Gromov Norm, Stable Complexity, and Ehrempreis-type problems

The complexity $\sigma(M)$ of a closed manifold M is the minimum number of simplices in a triangulation of M. If N covers M with degree d, then $\sigma(N)/d \leq \sigma(M)$. The stable complexity is the infimum of $\sigma(N)/d$ over all finite coverings of M. The focus of this research line are the relations between the stable complexity and Gromov's simplicial volume. It was conjectured that such invariants in fact equals, which is now know to be not the case in dimension four and higher. The tridimensional case remains open an it is related to a particular three-dimensional version of the Ehrenpreis conjecture. Contributions to the field published in [1].

Holomorphic curves in hyperbolic manifolds

The isometry group of a 3-manifold M has a natural almost complex structure, which is integrable only when M is hyperbolic, and in the case of $M = \mathbb{H}^3$ such a group is the well-know $\mathrm{PSL}(2, \mathbb{C})$. If $M = \mathbb{H}^3/\Gamma$ and $S = \mathbb{H}^2/\Lambda$, by a holomorphic curve in M parametrised by S we mean a holomorphic curve from $\tilde{S} \to \mathrm{PSL}(2, C)$ which is equivariant by a representation $\Lambda \to \Gamma$. Such objects have many different interpretations: its study is indeed equivalent to studying framed surfaces in M with "holomorphic" frame, or to stunying monodromies of locally flat connection over $\mathbb{CP}^1$-Bundles over S. The main objective is to completely classify such curves. Work in progress.

Singular projective structures on surfaces

Central actors in the study of holomorphic curves in hyperbolic manifolds, are projective structures on surfaces with cone singularities of angles 4π. Classically, smooth structure are classified by its holonomy and graftings, according to Goldman's theory. Also, the picture is very similar for singular structures with small cone-angles. In the case of large angles the situation is quite different. For instance, the space of such structure is connected, while the euler class identifies the various connected component in the classical case. The main objective here is to understand the topology and geometry of the space of structures having the same monodromy. Work in progress.

Hyperbolic geometry in dimension 3

Study of hyperbolic structures of three-manifolds. Hyperbolisation of three-manifolds via combinatoric and algebraic mathods. Generalisations and consequences

of the Hyperbolic Dehnn filling theorem. Degenerations of hyperbolic structures. Relations between hyperbolic structures on cusped three-manifolds and Euclidean structures on their boundaries. Contributions to the field published in [11,12,13,14].

Hyperbolic geometry in higher dimension

Deformation of hyperbolic three-manifolds in higher hyperbolic spaces. Rigidity of deformations of Dehn fillings of two-bridge knots in $SO(4,1)$. Contributions published in [7].

Asymptotic cones and coarse geometry

Study of asymptotic cones of non-positively curved manifolds and CAT(0) spaces. Detection of the geometric rank of geodesics via the asymptotic cone. Characterisation of higher rank symmetric spaces via their asymptotic cones. Contributions published in [6] and [3].

Outer Space

Study of the so-called Culler-Vogtmann Outer space, the analogous of the Teichmüller space for free groups. Definition and properties of metrics on the Outer Space and relations between geodesics and folding paths. Cotributions to the fields published in [2,4,5].

Geodesic currents on free groups

Study of the theory of geodesic currents on free groups. Analogous of the Liouville current for action of free groups on trees. Action of Aut(F_n) on the space of currents and behaviour of the length function under such action. Contributions to the field published in [8].

Dynamics of representations of fundamental groups of hyperbolic manifolds: BCG theory and Cannon-Thurston maps

Study of actions of discrete sub-groups of Isom$(\mathbb{H}^k)$ on $\mathbb{H}^n$. Existence of weak equivariant maps. Generalisation of the BCG techniques to the weak setting, allowing to build a baricentric map for any representation. Existence and convergence of measurable Cannon-Thurston maps. Contributions published in [10].

Volume of representations

Definition and study of the volume funcion for representations of fundamental group of k-manifolds in the group of isometries of $\mathbb{H}^n$. Volume-rigidity for hyperbolic manifolds and bound on the volume via the Gromov norm. Contribution published in [9,10,13].

Combinatorial methods for hyperbolic manifolds

Study of algebraic and geometric solutions of hyperbolicity equations for ideal triangulations of cusped three-manifolds. Uniqueness of geometric sulutions. Space of local deformations of algebraic solutions. Contribution published in [11, 12].

Theory of foliantions

Study of foliations of codimension one in 3-manifolds. Study of manifolds admitting taut foliations. Characterization of taut foliations in terms of dead-end and generalized Reeb components. Trasversality of embedded surfaces. Contributions to the field published in [15].

Cut loci of negatively curved manifolds

I collaboration with François Costantino, we studied the cut-locus of negatively curved manifolds, with particular attention to closed two- and three-manifolds. The cut locus of a point in hyperbolic n-manifold is an $(n-1)$-dimensional piecewise geodesic object with various shapes of singularities. Our aim is to prove that generically w.r.t. the point the cut locus has stable singularities — in litterature there are wrong proofs of that fact — and that the set G of points whose cut locus is not stable is $(n-1)$-dimensional. The set G is an invariant of the hyperbolic structure, and in dimension 3 is a topological invariant, then one can try to understand the information encoded id the set G.

In dimension two, we completed the project, that is, we proved that generically w.r.t. the point, the cut locus is a trivalent graph and the set G is a graph embedded in the surface. We have partial results in higher dimension, where the problem is still open. We have published none of our results in this field.

Other interests

Logic, fundational problems, complexity and caculability. Geometric measure theory, optimal transport problems.

Other activities

- Referee for international journals.
- Reviewer for Mathematical Reviews.

Publications

All the publications are available in electronic format on the web-page
`http://www.dm.unibo.it/~francavi`

1. Stefano Francaviglia, Roberto Frigerio, and Bruno Martelli. Stable complexity and simplicial volume of manifolds. Preprint, January 2012 (arXiv:1201.0660.)
2. Mathieu Carette, Stefano Francaviglia, Ilya Kapovich, and Armando Martino. Spectral rigidity of automorphic orbits in free groups. Preprint, June 2011 (arXiv:1106.0688.)
3. Stefano Francaviglia and Jean-François Lafont. Large scale detection of half-flats in CAT(0)-spaces. *Indiana University Mathematics Journal* 59(2) 2010, 395–416.
4. Stefano Francaviglia and Armando Martino. The isometry group of Outer Space. Preprint, December 2009 (arXiv:0912.0299.)
5. Stefano Francaviglia and Armando Martino. Metric properties of Outer space. *Publicacions Matemàtiques* 55(2) 2011, 433-473.
6. Stefano Francaviglia and Jean-François Lafont. Asymptotic cones, bi-Lipschitz ultraflats, and the geometric rank of geodesics. Preprint, January 2008 (arXiv:0801.3636.)
7. Stefano Francaviglia and Joan Porti. Rigidity of representations in $SO(4,1)$ for Dehn fillings on 2-bridge knots. *Pacific Journal of Mathematics* 238 (2008), No. 2, 249-274.
8. Stefano Francaviglia. Geodesic currents and length compactness for automorphisms of free groups. *Trans. of AMS* 361(1) 2009, 161-176.
9. Stefano Francaviglia and Benjamin Klaff. Maximal volume representations are Fuchsian. *Geometriæ Dedicata*, 117:111-124, 2006.
10. Stefano Francaviglia. Constructing equivariant maps for representations. *Annales de l'institut Fourier* (2009) 59(1):393-428.

11. Stefano Francaviglia. Algebraic and geometric solutions of hyperbolic Dehn filling equations. *Topology and its Applications*, 145(1-3):91–118, 2004.

12. Stefano Francaviglia. *Hyperbolicity equations for cusped* 3*-manifolds and volume-rigidity of representations*. PhD thesis, Scuola Normale Superiore, Pisa, 2003.
Further published in *Tesi*, vol. 2, Edizioni Scuola Normale Superiore di Pisa, 2005.

13. Stefano Francaviglia. Hyperbolic volume of representations of fundamental groups of cusped 3-manifolds. *Int. Math. Res. Not.*, (9):425–459, 2004.

14. Stefano Francaviglia. Similarity structures on the torus and the Klein bottle via triangulations. To be published in *Advances in Geometry.*

15. Stefano Francaviglia. Tautness of codimension-1 foliations in dimension 3 and transversality with embedded surfaces. *Rend. Accad. Naz. Sci. XL Mem. Mat. Appl. (5)*, 24:121–157, 2000.