Alessio Savini

Curriculum Vitae

Personal Information

Name	Alessio
Surname	Savini
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Education

2012 **Bachelor Degree in Mathematics**
Institution: Alma Mater Studiorum, University of Bologna.

2014 **Master Degree in Mathematics**
Institution: Alma Mater Studiorum, University of Bologna.

2018 **Ph.D. in Mathematics**
Institution: Alma Mater Studiorum, University of Bologna.
Supervisor: Prof. Stefano Francaviglia.
Thesis: *Numerical invariants and volume rigidity for hyperbolic lattices*.

Scientific career

02/2018-08/2018 **Scientific assistant**
Institution: ETH, Zurich.

09/2018-12/2018 **Senior scientific employee**
Institution: ETH, Zurich.

06/2019-08/2020 **PostDoc position**
Institution: Alma Mater Studiorum, University of Bologna.

09/2020-02/2023 **PostDoc position**
Institution: University of Geneva.

06/2023-09/2024 **Assistant Professor (Researcher of type A)**
Institution: Polytechnic University of Milano

10/2024-now **Associate Professor**
Institution: University of Milano Bicocca

Visiting period

02/2016 - 06/2016 **Institution: ETH, Zurich.**
Supervisor: Prof. Alessandra Iozzi and Prof. Marc Burger.

10/2019 **Institution: University of Regensburg**
Collaboration with Dr. Marco Moraschini.

11/2019 **Institution: University of Geneva**
Collaboration with Prof. Michelle Bucher.

01/2020 **Institution: University of Heidelberg**
Invited by Prof. Maria Beatrice Pozzetti.

05/2023 **Institution: University of Geneva**
Collaboration with Prof. Michelle Bucher.

Member of scientific projects/Grants/Awards

06/2019-08/2020 **Participant of PRIN**
Title project: *Real and complex manifolds: Topology, Geometry and Dynamics*.
Grant number: 2017JZ2SW5.
Institution of realization: University of Bologna.

09/2020-02/2023 **Participant of SNSF**
Title project: The topology and geometry of manifolds.
Grant number: 200020-192216.
Institution of realization: University of Geneva.

Teaching activities

Teaching assistant

02/2014 - 06/2014 **Topologia Algebrica 1**
Institution: Alma Mater Studiorum, University of Bologna.
Amount of hours: 10h.

09/2014 - 09/2015 **Geometria e Algebra T**
09/2015 - 09/2016 Institution: Alma Mater Studiorum, University of Bologna.
Amount of hours: 30h.

09/2016 - 12/2016 **Algebra 2**
Institution: Alma Mater Studiorum, University of Bologna.
Amount of hours: 12 h.

02/2018 - 06/2018 **Topology**
Institution: ETH.
Amount of hours: 24 h.

09/2020 - 12/2020 **Statistique et Methodologie Pharmaceutique**
Institution: University of Geneva.
Amount of hours: 24h.

02/2021 - 06/2021 **Geometrie 1**
02/2022 - 06/2022 Institution: University of Geneva.
Amount of hours: 24h.

02/2021 - 06/2021 **Les Mathematiques de John Conway**
Institution: University of Geneva.
Amount of hours: 12 h.

09/2021 - 12/2021 **Mathematiques generales**
Institution: University of Geneva.
Amount of hours: 24h.

09/2022 - 12/2022 **Nombres p-adiques et groupes p-adiques**
Institution:University of Geneva.
Amount of hours: 24h.

09/2022 - 12/2022 **Introduction to hyperplanes arrangements**
Institution:University of Geneva.
Amount of hours: 24h.

02/2024 - 06/2024 **Algebra Lineare e Geometria**
Institution: Politecnico di Milano.
Amount of hours: 30h.

10/2024 - 01/2025 **Algebra Lineare e Geometria**
09/2025 - 12/2025 Institution: University of Milano-Bicocca.
Amount of hours: 24h.

Teacher

09/2018 - 12/2018 **Introduction to Lie groups**
Institution: ETH.
Amount of hours: 24h.

09/2018 - 12/2018 **Proofs from the book**
Institution: ETH.
Amount of hours: 24h.

02/2020 - 04/2020 **Introduction to Lie groups (Ph.D. course)**
Institution: Alma Mater Studiorum, University of Bologna.
Amount of hours: 30h.

09/2021 - 12/2021 **Coordinator of the master students seminar "Geometry, groups and combinatorics"**
Institution:University of Geneva.
Amount of hours: 12h.

09/2023 - 12/2023 **Geometria e Algebra Lineare**
Institution:Politecnico di Milano.
Amount of hours: 48h.

10/2024 - 01/2025 **Geometria III**
09/2025 - 12/2025 Institution: University of Milano-Bicocca.
Amount of hours: 48h

03/2025 - 06/2025 **Geometria e Algebra Lineare**
Institution: University of Milano-Bicocca.
Amount of hours: 48h

09/2025 - 12/2025 **Analisi Matematica**
Institution: University of Milano-Bicocca.
Amount of hours: 48h

National Scientific Habilitation

Habilitation to Full Professor
National Scientific Habilitation to Full Professor MATH-02/B expiring on the 04/11/2037

Supervision activities

Bachelor thesis

Emanuele Partenza, University of Bologna, *Topologia dei gruppi di matrici*
Stefano Fanciosti, University of Milano-Bicocca, *Superfici di Riemann e campi di funzioni meromorfe*
Beatrice Pedroni, University of Milano-Bicocca, *Invarianti topologici di gruppi di matrici*
Francesco de Simone, University of Milano-Bicocca, *Il teorema di De Rham*
Dario Giuseppe Parma, University of Milano-Bicocca, *Il teorema di uniformizzazione di Riemann*
Oscar Pozzi, University of Milano-Bicocca, *Aspetti di azioni ergodiche di gruppi*
Giulio Preto Ehinomwen, University of Milano-Bicocca, *Teoria ergodica e operatore di Koopman*
Chiara Piasente, University of Milano-Bicocca, *Curve ellittiche e funzione P di Weierstrass*

Master thesis

Jacopo Guerrieri, University of Milano-Bicocca, *Spazi simmetrici e loro applicazione alla coomologia continua*

PhD thesis

Filippo Sarti, University of Bologna, *Numerical invariants for measurable cocycles*

Scientific activities

Organizer of Ph.D. students seminars
Institution: Alma Mater Studiorum, University of Bologna.
2016-2018

Member of Indam GNSAGA
2014-now

Reviewer for Zentralblatt, AMS
20 reviews

Referee
Journals: *Proc. Lond. Mat. Soc*, *Topology Appl.*, *Ergodic Theory Dynam. Systems*, *Bull. Lond. Math. Soc.*, *Bull. Sci. Math.*, *Enseign. Math.*

Conference organizer

Geometria in Bicocca
Institution: University of Milano-Bicocca.
Period:11/09/2025 - 12/09/2025

Outreach

Speaker for high school
Conference title: *Critica della ragion ... podistica: i ponti di Konisberg e altri percorsi impossibili*,
Academic year: 2024/2025

Course for high school professor
Course title: *IA in classe: fondamenti matematici e attività per la classe*,
Academic year: 2025/2026

Language Skills

Italian	Mothertongue
English	C1
French	B2

Computer Skills

Office Tool	Good knowledge of Excel, PowerPoint, Word, Outlook
Matlab, Sagemath	Excellent User
R, Python, Html	Moderate User

Selected Talks

Rigidity of real hyperbolic lattices: a natural approach, Baby geometry seminar, University of Pisa.

Rigidity at infinity of real hyperbolic lattices, Geometry graduate colloquium, ETH.

Volume of measurable cocycles of real hyperbolic lattices, Oberserminar, University of Regensburg.

Borel invariant of measurable cocycle of 3-manifold groups, Seminaire Geometrie et Groupes, University of Geneva.

Euler number of measurable cocycles of surface groups, Topics in Mathematics, University of Bologna.

A Mostow rigidity result for measurable cocycles of hyperbolic lattices, University of Heidelberg.

Cartan invariant for measurable cocycles, KIT, Zoom Online Seminar.

Incidence geometry and maximal measurable cocycles of complex hyperbolic lattices, Seminaire Geometrie et Groupes, University of Geneva.

Continuous bounded cohomology, representations and multiplicative constants, International Young Seminar on Simplicial Volume and Bounded Cohomology, Zoom Online.

Superrigidity for virtual actions of complex hyperbolic lattices, Seminar of Geometry and Spectral Theory, Institute Fourier, Grenoble.

Sur la cohomologie measurable des groupes de Lie, Seminaire Geometrie et Groupes, University of Geneva.

Some explicit cocycles on Furstenberg boundaries, Seminario di Algebra e Geometria, University of Bologna.

Cohomology of semisimple Lie groups, Bicocca University, Milano

Zariski density and Kahler rigidity, International Young Seminar on Simplicial Volume and Bounded Cohomology, Zoom Online.

Coomologia di gruppi di Lie, Seminario informale di Algebra e Geometria, Politecnico di Milano.

Sulla coomologia di gruppi, Seminar of the Department, University of Milano Bicocca.

Invited Talks at Conferences

09/2020 *Multiplicative constants and maximal measurable cocycles in bounded cohomology*, Virtual workshop: Simplicial Volumes and Bounded Cohomology

03/2023 *The mysterious ... punctured plane*, Manifolds and groups in Bologna

09/2025 *Actions, groupoids and their cohomology*, Ricercatori in algebra e geometria

Research Interests

Rigidity at infinity of representations of lattices in semisimple Lie groups

Numerical invariants and natural maps of measurable cocycles

Parametrized class and orbital cohomology

Algebraic representability and boundaries of ergodic groupoids

Measurable cohomology of groups and groupoids

Published/Accepted Papers

A. Savini, *The ω-Borel invariant of representations into $SL(n, \mathbb{C}_\omega)$*, Groups Geom. Dyn. **13** (2019), n. 3, 767–1131.

A. Savini, *Rigidity at infinity for lattices in rank-one Lie groups*, J. Top. Anal. **12** (2020), n. 1, 113–130.

S. Francaviglia, A. Savini, *Volume rigidity at ideal points of the character variety of hyperbolic 3-manifolds*, Ann. Sc. Norm. Super. Pisa Cl. Sci., Vol. XX (2020), 1325–1344, issue 4.

A. Savini, *Entropy rigidity for foliations by strictly convex projective manifolds*, Pure Appl. Math. Q. **17** (2021), n. 1, 575–589

A. Savini, *Algebraic hull of maximal measurable cocycles of surface groups into Hermitian Lie groups*, Geom. Dedicata **213** (2021), n. 1, 375–400

A. Savini, *Equivariant maps for measurable cocycles with value into higher rank Lie groups*, Pacific J. Math. **312** (2021), n. 2, 505–525.

F. Sarti, A. Savini, *Superrigidity of maximal measurable cocycles of complex hyperbolic lattices*, Math. Z. **300** (2022), n. 1, 421-433.

A. Savini, *A note on the elementarity of virtual dendro-morphisms of higher rank lattices*, Proc. Amer. Math. Soc. **150** (2022), n. 11, 4995–5008.

M. Moraschini, A. Savini, *Multiplicative constants and maximal measurable cocycles in bounded cohomology*, Ergodic Theory Dynam. Systems, **42** (2022), n. 11, 3490-3525

M. Moraschini, A. Savini, *A Matsumoto-Mostow result for Zimmer's cocycles of hyperbolic lattices*, Trans. Groups **27** (2022), n. 4, 1337-1392

A. Savini, *Natural maps for measurable cocycles of compact hyperbolic manifolds*, J. Inst. Math. Jussieu **22** (2023), n. 1, 421-448

A. Savini, *Rigidity at infinity for the Borel function of the tetrahedral reflection lattice*, Algeb. Geom. Top. **23** (2023), n. 4, 1583–1600

F. Sarti, A. Savini, *Parametrized Kahler class and Zariski dense orbital 1-cohomology*, Math. Res. Lett. **30** (2023), n. 6, 1895–1929

A. Savini, *Continuous bounded cohomology, representations and multiplicative constants*, in the collection *Bounded Cohomology and Simplicial Volume*, LMS Lecture Notes 49 (2023), Cambridge University Press, 108-117

L. Battista, S. Francaviglia, M. Moraschini, F. Sarti, A. Savini, *Bounded cohomology of exact forms*, Proc. Amer. Math. Soc **152** (2024), n,1 , 71–80

A. Savini, *On trivializability of rank-one cocycle with an invariant field of projective measures*, Europ. J. Math. **10** (2024), n. 8 `https://doi.org/10.1007/s40879-023-00721-1`

A. Savini, *Borel invariant for measurable cocycles of 3-manifold groups*, J. Top. Anal. **16** (2024), n. 3, 385–408

A. Savini, *Orbital cohomology and Kahler rigidity*, Sémin. Théorie Spectr. Géom. **37** (2021-2022), 111–135

M. Bucher, A. Savini, *Kernels in measurable cohomology of transitive actions*, Geom. Dedicata **219** (2025), n. 45, `https://doi.org/10.1007/s10711-025-01006-5`

F. Sarti, A. Savini, *Boundary maps and reducibility for cocycles into the isometry group of* $\mathrm{CAT}(0)$*-spaces*, Groups Geom. Dyn., **19** (2025), 1013-1040

F. Sarti, A. Savini, *Boundaries and equivariant maps for ergodic groupoids*, Glasg. Math. J. **68** (2026), n. 1, 164–195

M. Bucher, A. Savini, *Alternating cochains on Furstenberg boundaries and measurable cohomology*, to appear on Algeb. Geom. Topology, 2026+

Submitted preprints

A. Savini, *Parametrized Euler class and semicohomology theory*, `https://arxiv.org/pdf/2101.11971.pdf`, submitted

M. Bucher, A. Savini, *Some explicit cocycles on the Furstenberg boundary for products of isometries of hyperbolic spaces and* $\mathrm{SL}(3,\mathbb{K})$, `https://arxiv.org/pdf/2209.10331`, submitted

F. Sarti, A. Savini, *Measurable bounded cohomology of measured groupoids*, `https://arxiv.org/pdf/2304.07765`, submitted

F. Sarti, A. Savini, *Measurable bounded cohomology of* t*-discrete measured groupoids via resolutions*, `https://arxiv.org/pdf/2503.22350`, submitted

M. Bucher, A. Savini, *Projections from Furstenberg boundaries onto maximal flats and barycenter maps*, `https://arxiv.org/pdf/2504.01788`, submitted

M. Bucher, A. Savini, *Continuous cochains on Furstenberg boundaries and injectivity of the comparison map*, `https://https://arxiv.org/pdf/2510.05333`, submitted

A. Savini, *Uniformly bounded representations of t-discrete measured groupoids into finite Von Neumann algebras*, `https://https://arxiv.org/pdf/2512.21422`, submitted

Not published

E. Manfredi, A. Savini, *Fibered knots and links in lens spaces*, `https://arxiv.org/pdf/1502.03345.pdf`.

A. Savini, *Asymptotically Moebius maps and rigidity for the hyperbolic plane*, `https://arxiv.org/abs/1906.10563`.