Marco Radeschi

Curriculum Vitae

Education

2012	**Ph.D. in Mathematics**, *University of Pennsylvania*, Philadelphia Thesis title: "Low dimensional singular Riemannian foliations in spheres". Advisor: Wolfgang Ziller.
2008	**Ma in Mathematics**, *Università degli Studi di Torino*, Torino Thesis title: "The Canonical Ring is finitely Generated". Advisor: Alberto Collino.
2006	**Ba in Mathematics for Engineering**, *Politecnico di Torino*, Torino Thesis title: "Algebra, Analysis and Geometry of Elliptic Curves". Advisor: Letterio Gatto.

Employment

10/2023 -	**Associate Professor**, *Università degli Studi di Torino*, Italy
2022 - 2023	**Associate Professor**, *University of Notre Dame*, US
2017 - 2022	**Assistant Professor**, *University of Notre Dame*, US
2012 - 2016	**Postdoctoral fellow in Mathematics**, *WWU Münster*, Germany
2014 - 2015	**Visiting Postdoctoral fellow in Mathematics**, *KIT, Karlsruhe*, Germany

Scholarships and fellowships

2008-2012	Benjamin Franklin Fellowship, Department of Mathematics, University of Pennsylvania
2006-2008	M.Sc. Scholarship, *INdAM* - National Institute of high Mathematics, Italy
2003-2006	Ba. Scholarship, *INdAM* - National Institute of high Mathematics, Italy

Honors and awards

2010	Penn Prize for Excellence in Teaching by Graduate Students	*Honorable Mention*
2003	Italian Mathematical Olympiad, National competition	*Silver Medal*

Grants

2021-2026	NSF CAREER grant DMS-2042303 *Singular Riemannian Foliations, with Applications to Curvature and Invariant Theory*, $475,280 (Grant interrupted in 2023 due to moving to Italy)

2018-2021	NSF grant DMS-1810913, *Submanifolds and foliations in Riemannian manifolds*, $154,750	
2022	NSF Conference Grant, *Differential Geometry and Geometric Analysis*, $30,000	

Other

2018	Abilitazione Scientifica Nazionale (Italia)	*Professore di Seconda Fascia*
2021	Abilitazione Scientifica Nazionale (Italia)	*Professore di Prima Fascia*

Mentoring

BA Thesis Students

2022-2023	Ethan Kirsch
2022-2023	Patrick Conway

PhD Students

2019-2024	Jinxuan Chen

Postdocs

2017-2019	Priyanka Rajan
2021-2023	Elahe Khalili Samani

Visiting students

2018	Diego Corro, visiting PhD student from KIT, Karlsruhe, Germany (3 months)
2019	Francesco Panelli, visiting Postdoc from Università di Firenze, Florence, Italy (3 weeks)

Papers and Preprints

All papers are in peer-reviewed journals.

Published

1. *On the topology of leaves of singular Riemannian foliations* (with E. Khalili Samani), to appear in Rev. Mat. Iberoam. (2023), preprint arXiv:2203.15910.

2. *On the structure of Besse convex contact spheres* (with M. Mazzucchelli), Trans. AMS **376** (2023), 2125–2153.

3. *Maximality of Laplacian algebras, with applications to invariant theory* (with R. Mendes), Annali di Matematica Pura ed Applicata **202** (2023), 1011–1031.

4. *How highly connected can an orbifold be?* (with C. Lange), to appear in Rev. Mat. Iberoamericana (2022), preprint arXiv:2112.14634.

5. *Polar foliations on symmetric spaces and the mean curvature flow* (with X. Liu), to appear in J. Reine Ang. Math. (Crelle) (2022), preprint arXiv:2006.03945.

6. *Odd dimensional orbifolds with all geodesics closed are covered by manifolds* (with M. Amann and C. Lange), Math. Ann **380** (2021), 1355–1386

7. *Torus actions on rationally elliptic manifolds* (with M. Kerin and F. Galaz-Garcia), Math. Z **297** (2021), 197–221.

8. *Virtual immersions and minimal hypersurfaces in compact symmetric spaces* (with R. Mendes), Calc. Var. PDEs **192** (2020).

9. *Laplacian algebras, manifold submetries and the Inverse Invariant Theory Problem* (with R. Mendes), Geom. Funct. Anal. (GAFA) **30** (2020), 536–573.

10. *Robust index bounds for minimal hypersurfaces of isoparametric submanifolds and symmetric spaces* (with R. Mendes and C. Gorodski), Calc. Var. PDEs **58** (2019).

11. *Singular Riemannian foliations and their quadratic basic polynomials* (with R. Mendes), Transf. Groups **25** (2019), no. 1, 251–277. [arXiv]

12. *Virtual immersions, and a characterization of symmetric spaces* (with R. Mendes), Ann. Glob. Anal. Geom. (AGAG) **55** (2019), no 1, 43–53.

13. *A slice theorem for singular Riemannian foliations, with applications* (with R. Mendes), Trans. AMS **371** (2019), no 7, 4931–4949.

14. *A note on the Petersen-Wilhelm Conjecture* (with D. Gonzalez-Alvaro), Proc. Amer. Math. Soc. **146** (2018), no. 10, 4447–4458.

15. *Algebraic nature of singular Riemannian foliations in spheres* (with A. Lytchak), J. Reine Ang. Math. (Crelle) **744** (2018), 265–273.

16. *Torus orbifolds, rational ellipticity and non-negative curvature* (with M. Kerin, F. Galaz-Garcia and M. Wiemeler), Int. Math. Res. Not. **18** (2018), 5786–5822.

17. *Metrics on spheres all of whose geodesics are closed* (with B. Wilking), Invent. Math. **210** (2017), no. 3, 911–962.

18. *Closure of singular foliations: the proof of Molino's Conjecture* (with M. Alexandrino) Compos. Math. **153** (2017), no. 12, 2577–2590.

19. *Smoothness of isometric flows on orbit spaces and Molino's conjecture* (with M. Alexandrino), Transf. Groups **22** (2017), no. 1, 1–27.

20. *On homogeneous composed Clifford foliations* (with C. Gorodski), Münster J. Math. **9** (2016), 35–50.

21. *Mean curvature flow of singular Riemannian foliations* (with M. Alexandrino), J. of Geom. Anal. **26** (2016), no. 3, 2204–2220.

22. *Singular Riemannian foliations and applications to positive and nonnegative curvature* (with F. Galaz-Garcia), J. Topol. **8** (2015), no. 3, 603–620.

23. *Differentiable rigidity theorems on 4-manifolds* (with J. Ge), Math. Ann. **363** (2015), no. 1-2, 525–548.

24. *Clifford algebras and new singular Riemannian foliations in spheres*, Geom. Funct. Anal. **24** (2014), no. 5, 1660–1682.

25. *Isometries between leaf spaces* (with M. Alexandrino), Geom. Dedicata **174** (2015), no. 1, 193–201.

Submitted

26. *Low dimensional singular Riemannian foliations in spheres*, preprint arXiv:1203.6113.

27. *Rational ellipticity of G-manifolds from their quotients* (with E. Khalili Samani).

28. *A Weyl's Law for Singular Riemannian Foliations with Applications to Invariant Theory*, preprint arXiv:2312.06533.

Teaching Experience

Instructor at Università degli Studi di Torino

Fall 2023	Topologia Algebrica
Fall 2023	Algebra Lineare

Instructor at University of Notre Dame, South Bend, IN

Spring 2023	Math 20820 - Honors Algebra II.
Fall 2022	Math 20810 - Honors Algebra I.
Spring 2022	Math 40670 - Undergraduate Differential Geometry.
Spring 2022	Math 20820 - Honors Algebra II.
Fall 2022	Math 20810 - Honors Algebra I.
Spring 2021	Math 20820 - Honors Algebra II.
Fall 2020	Math 20810 - Honors Algebra I.
Spring 2020	Math 60670 - Differential geometry I.
Spring 2020	Math 20550 - Calculus III.
Fall 2019	Math 20750 - ODE's.
Spring 2019	Math 60670 - Differential geometry I.
Fall 2018	Math 20550 - Calculus III.
Fall 2018	Math 20750 - ODE's.
Spring 2018	Math 20550 - Calculus III.
Spring 2018	Math 60670 - Differential Geometry I.
Fall 2017	Math 20550 - Calculus III.
Spring 2017	Topics in Differential Geometry I - Singular Riemannian foliations.

Summer School Instructor a SMI, Perugia

July 2021	Mini Course in Singular Riemannian foliations

Instructor at KIT, Karlsruhe

October 2014-March 2015	Comparison geometry, for Differential Geometry master students.
October 2014-March 2015	Reading seminar on Exotic Spheres, for master students in Differential Geometry.

Summer School Instructor at UNAM Mexico City

July 2014	Mini Course in Singular Riemannian foliations

Teaching assistant at University of Pennsylvania, Philadelphia

Spring 2011	Math 103 - Calculus I
Fall 2010	Math 240 - Calculus III
Spring 2010	Math 115 - Calculus II

Talks

Invited talks at Conferences

Sep 2023	"XXII Congresso UMI", Pisa, Italy
Oct 2022	"Symmetry and shape", Santiago de Compostela, Spain
May 2022	"Groups in Galway and the Irish Geometry Conference", Galway, Ireland
Apr 2022	AMS Special Session "Lie Group Actions in Differential Geometry", Joint Mathematical Meeting, Seattle, WA
Jul 2021	Special session "Group actions in Differential Geometry", Mathematical Congress of the Americas, Buenos Aires, Argentina (online)
Jan 2020	"Symmetry and Geometry on the Southern Great Plains", University of Oklahoma, Norman, OK
Jan 2020	Special Session "Riemannian foliations and applications", Joint Mathematics Meeting, Denver
Feb 2019	"Texas Geometry and Topology Conference", Forth Worth, TX
Jul 2018	ICM Satellite Conference in Differential Geometry, São Paulo, Brazil
Mar 2018	"Spring Central Sectional Meeting", Ohio State University, Columbus, OH
Nov 2017	"Fall Western Sectional Meeting", UC Riverside, Riverside, CA
Aug2017	Conference "Representations of Riemannian geometry", St. Joseph's University, Philadelphia PA
Apr 2017	"Geometry Festival", Duke University, NC
Aug 2016	3rd Smoky Great Plains Geometry Conference, Townsend TN
Jul 2015	Workshop "Curvature and Global Shape", University of Münster

Jun 2015	Bielefeld Geometry & Topology Days, Bielefeld
May 2015	Conference "Geometrie", MFO Oberwolfach
Dec 2014	Workshop "Lagrangian Submanifolds and related topics", University of Milan
Jun 2014	Conference "Geometrie", MFO Oberwolfach
Jan 2012	Workshop "Manifolds with Lower Curvature Bounds", MFO Oberwolfach

Contributed talks at conferences

Jul 2017	Workshop "Curvature and global shape", Muenster, Germany
Feb 2015	Workshop in Memory of Sergio Console, Torino
May 2014	Conference "Groups Actions in Riemannian Geometry", UNC Chapel Hill, NC

Seminars and Colloquia

Feb 2024	*Invariant the ory without groups*, Methusalem Colloquium, KU Leuven, Belgium
Jan 2024	*Rational ellipticity of G-manifolds from their quotient*, BACH Seminar, Bochum, Germany
Nov 2023	*Rational ellipticity of G-manifolds from their quotient*, Augsburg, Karlsruhe and Fribourg joint Workshop, Fribourg, Switzerland
Oct 2022	*Invariant theory without groups*, Colloquium, Syracuse University, NY
Oct 2022	*Invariant theory without groups*, Colloquium, Texas Christian University, TX
Mar 2022	*Invariant theory without groups*, Geometry Seminar, University of Milan
Jan 2022	*Invariant theory without groups*, UC Berkeley Geometry seminar - Zoom
Oct 2021	*Invariant theory without groups*, Virtual Seminar on Geometry with Symmetries
Mar 2021	*Manifold submetries and polynomial algebras*, CMAT Geometry Seminar - Zoom
Feb 2021	*Manifold submetries and polynomial algebras*, CUNY Geometry Seminar - Zoom
May 2020	*Manifold submetries and polynomial algebras*, University of Florence - Zoom
Mar 2020	*Manifold submetries and polynomial algebras*, University of Toronto
May 2019	*Minimal hypersurfaces in symmetric spaces*, Scuola Normale di Pisa
May 2019	*Riemannian orbifolds with all geodesics closed*, University of Florence
May 2019	*Riemannian orbifolds with all geodesics closed*, University of Parma
May 2019	*Manifold submetries and polynomial algebras*, University of Torino
Apr 2019	*The energy functional for Besse manifolds*, Variational Methods in Geometry, IAS, Princeton
Jun 2018	*The algebraic side of Singular Riemannian foliations*, Cologne University
Jun 2018	*The algebraic side of Singular Riemannian foliations*, Muenster University
May 2018	*On Riemannian orbifold, with all geodesics closed*, Peking University
May 2018	*The algebraic side of Singular Riemannian foliations*, Beijing Normal University
May 2018	*The index of minimal hypersurfaces in symmetric spaces*, Beijing Normal University
Apr 2018	*The index of minimal hypersurfaces in symmetric spaces*, Princeton University

Jun 2017	*Minimal hypersurfaces in symmetric spaces*, University of Münster
Jun 2017	*On the Berger Conjecture for metrics on the three-sphere*, University of Cologne
Apr 2017	*Minimal hypersurfaces in symmetric spaces*, University of Chicago
Apr 2017	*Minimal hypersurfaces in symmetric spaces*, University of Oklahoma
Oct 2016	*Singular Riemannian foliations in spheres, and their connections to (Clifford) algebras*, University of Strasbourg
Jun 2016	*Representation theory without groups*, Colloquium, University of Cologne
Jun 2016	*Representation theory without groups*, MPI Bonn
May 2016	*Crash course on singular Riemannian foliations*, Mini-course, University of Leuven
Jan 2016	*On a Conjecture of Berger on manifolds with all geodesics closed*, Imperial College
Jan 2016	*On a Conjecture of Berger on manifolds with all geodesics closed*, Colloquium, Notre Dame University
Dec 2015	*On a Conjecture of Berger on manifolds with all geodesics closed*, Colloquium, UCSB
Feb 2015	*Metrics on spheres all of whose geodesics are closed*, Università di Parma
Dec 2014	*Metrics on spheres all of whose geodesics are closed*, University of Cologne
Nov 2014	*Metrics on spheres all of whose geodesics are closed*, KIT
Sep 2014	*Clifford algebras and new singular Riemannian foliations in spheres*, Universidad Autonoma de Madrid
Oct 2013	*Clifford algebras and new singular Riemannian foliations in spheres*, University of Cologne
Oct 2013	*Mean curvature flow and singular Riemannian foliations*, University of Florence
Sep 2013	*Aspherical foliations and actions of tori on Riemannian manifolds*, University of Turin
Jun 2013	*Torus actions on rationally elliptic manifolds*, USP.
Dec 2012	*Smoothness of isometries between leaf spaces*, University of Münster
Nov 2012	*Smoothness of isometries between leaf spaces*, Colloquium, University of Cologne
Dec 2011	*Low dimensional Singular Riemannian Foliations in spheres*, University of Cologne
Sep 2011	*Low dimensional Singular Riemannian Foliations in spheres*, IMPA

Introductory tallks

Aug 2021	*Beyond the Pillars of Hercules in Riemannian Geometry* Talk to first-year PhD students at Notre Dame during orientation week
Aug 2019	*What is curvature?* Talk to first-year PhD students during orientation week
Apr 2019	*Manifold submetries and Laplacian algebras*, mini-symposium "Geometry of, and via symmetry"
Aug 2018	*Singular Riemannian foliations in round spheres*, Math Graduate Student Seminar
Aug 2018	*Closed geodesics on manifolds*, talk to first-year PhD students during orientation week

Visiting

2018 BNU, Beijing, China (3 weeks)

2017 Uni Koeln, Cologne, Germany (3 weeks)

2013 University of Florence, Florence, Italy (3 weeks)

2013 University of Turin, Turin, Italy (3 weeks)

2013 USP, São Paulo, Brazil (2 weeks)

2012 IMPA, Rio de Janeiro, Brazil (January-April)

2011 USP, São Paulo, Brazil (2 weeks)

2011 University of Münster, Münster, Germany (October-December)

2011 IMPA, Rio de Janeiro, Brazil (June-September)

2009 IMPA, Rio de Janeiro, Brazil (August- December)

Events organized

Jun 2022 Co-organizer of the conference "Riemannian Geometry and Geometric analysis", Florence

Apr 2019 Co-organizer of the symposium "Geometry of, and via symmetry", Notre Dame

Jan 2015 Co-organizer of the "Riemannian topology Seminar", Fribourg

Jul 2015 Co-organizer of the workshop "Curvature and global shape" Münster

2013-2016 Organizer of the reading seminar for the working group in Differential Geometry at the University of Muenster, during the semesters: Fall 2013, Fall 2014, Spring 2015, Fall 2015, Spring 2016, Fall 2016

Department service

University of Notre Dame

Dec 2023 Member of committee in the Oral Candidacy Examination of Luis Atzin Franco Reyna

Jan- Feb 2023 Served in the graduate admission Committee

2022-2023 Member of Search Committee

2022-2023 Member of Hiring Committee

Jan- Feb 2022 Served in the graduate admission Committee

Apr 2021 Member of the PhD Defense committee of Samuel Perez-Ayala

Feb 2021 Member of committee in the Oral Candidacy Examination of Karim Boustany

Jan- Feb 2021 Served in the graduate admission Committee

Jan 2021 Member of committee in the Oral Candidacy Examination of Jinxuan Chen

Jan- Feb 2020 Served in the graduate admission Committee

May 2019 Member of Adam Moreno's PhD Defense Committee

Apr 2019 Reader for Matt Drnevich's senior thesis "Morse Theory and the Arnold Conjecture"

Jan- Feb 2019	Served in the graduate admission Committee
Apr 2018	Reader for Paul Sweeney Jr's senior Thesis "Crofton Formulæ"
Jan- Feb 2018	Served in the graduate admission Committee
2017-now	Served as departmental math major advisor
Jan 2018	Member of committee in the Oral Candidacy Examination of Aaron Tyrrell

Service to Mathematical community

2023	Member of NSF Panel
2021	Member of NSF Panel
2020	External member of PhD Thesis committee for Leonardo Francisco Cavenaghi, University of Sao Paulo
2020	Reviewer for grant proposal for Czech Science Foundation
2019	Member of NSF Panel
2019	PhD Thesis reviewer for Francesco Panelli, University of Florence
2014-now	Referee for several journals and proceedings, such as Calc. Var. PDE's, Geom. Topol., Crelle, Geom. Funct. Anal., IMRN, J. of Topology, Math. Annalen, J. of Geometry and Physics, Geom. Dedicata, Alg. Geom. Top., Math. Z, Math. Nach., Proc. AMS, Ann. Glob. Anal. Geom, Annali di matematica Pura ed Applicata, American J. of Math.

Outreach Activities

Oct/Dec 2023	Given Broad-Audience Talks "The concept of curvature, from the cartographic problem to the mass of the universe"
2022-2023	Organizer of the Girls Math Club, for girls in 3rd-8th grade
2020, 2021	Judge for the *Northern Indiana Regional Science and Engineering Fair*
2020-2021	Leader of the Germaine Math Circle, for students in 3rd grade
2019-2020	Mentored a High School Student for 2 semesters, on a project "Geometric constructions with ruler and straightedge vs. origami"
2017	Wrote educational article on closed geodesics for the Snapshots of Modern Mathematics, by FMO Oberwolfach, freely available online (DOI: 10.14760\iSNAP-2017-005-EN)