Curriculum Vitae of Tommaso Pacini
(updated December 2019)

Current position: Associate Professor, University of Torino, Italy.
Work address: Dip. di Matematica "Peano", via Carlo Alberto 10, 10123 Torino, Italy.
Work phone: 0039-0116702906.
Email: tommaso.pacini@unito.it
Citizenship: Italy/USA (dual).

Education:
- Ph.D. in Mathematics, Univ. of Pisa, 2002.
- Laurea (equivalent to M.S.) in Mathematics, Univ. of Florence, 1996.

Ph.D. thesis:
- Advisors: Gang Tian (MIT), Paolo de Bartolomeis (Univ. of Florence).
- Thesis title: *Flows and deformations of Lagrangian submanifolds in Kaehler-Einstein Geometry*.

Recent appointments:
- Associate Professor, University of Torino, 2016-onwards.
- Italian habilitation as associate professor, 2014.
- Professore aggregato, Scuola Normale Superiore, 2012-2013 and 2015-2016.
- Ricercatore, Scuola Normale Superiore, 2009-2016 (tenured position).
- EU Marie Curie Research Fellow, University of Oxford, 2007-2009.
- EPSRC Research Fellow, Imperial College, 2006-2007.
- VIGRE Visiting Assistant Professor, Georgia Institute of Technology, 2003-2006.

Major grants:
- Marie Curie ERG "reintegration grant" at SNS, 2010-2013: research funds.
- Marie Curie EIF at University of Oxford, 2007-2009: salary plus research funds.
Both grants above are project-specific. They are awarded by the Scientific Direction of the European Union after an extensive referee process.

Other grants and fellowships:
- Research grant "FFABR" from the Italian Ministry of Education and Research, 2017.
- SNS research funds for project "Analytic aspects of totally real geometry" (2 external referees), 2016-2018.

- Participant in PRIN 2018, financed by MIUR, headed by F. Bracci (Univ. Roma 2).
- Participant in PRIN 2010/2011 and 2015, financed by MIUR, headed by F. Ricci (SNS).
- Participant in ERC Advanced grant, financed by ERC, headed by L. Ambrosio (SNS).
- Research Affiliate (with stipend), MIT, 2003 (3 months).
- EU EAGER fellowship, Imperial College, 2002 (7 months).
- Additional graduate funds to work at MIT as visiting student, 1999-2001.
- Undergraduate grant to study at Courant Institute (NYU), 1995 (Fall).
Also: EPSRC and VIGRE fellowships (see "recent appointments", above), SNS research funds (with Carlo Mantegazza and Lorenzo Mazzieri, 2011-2013, 2013-2015), UniTo research funds (2018-2020 and with L. Vezzoni, 2016-2018).

Research interests:

- *Differential geometry*: geometry of submanifolds; calibrated geometry; manifolds with special holonomy.
- *Complex analysis and geometry*: totally real submanifolds, holomorphic invariants.
- *Geometric analysis*: deformations and moduli spaces of calibrated submanifolds; desingularization procedures; gluing techniques; geometric flows.
- *Geometric PDE*: Geometric techniques in Optimal Transport; Hamiltonian PDE.

Publications:

1) Lotay-Pacini, "From Lagrangian to totally real geometry: coupled flows and calibrations", to appear in *Comm. Anal. Geom.*

2) Lotay-Pacini, "From minimal Lagrangian to J-minimal submanifolds: persistence and uniqueness", *Boll. UMI* 12 (2019), Issue 1-2, 63-82 (special volume in memory of P. de Bartolomeis).

3) Pacini, "Maslov, Chern-Weil and mean curvature", *J. of Geometry and Physics* 135 (2019), 129-134.

4) Lotay-Pacini, "Complexified diffeomorphism groups, totally real submanifolds and Kaehler-Einstein geometry", *Trans. Amer. Math. Soc.* 371 (2019), Number 4, 2665–2701.

5) Corti-Haskins-Nordstrom-Pacini, "G_2 manifolds and associative submanifolds via semi-Fano 3-folds", *Duke Math. J.* 164 (2015), no. 10, 1971–2092.

6) Corti-Haskins-Nordstrom-Pacini, "Asymptotically cylindrical Calabi-Yau 3-folds from weak Fano 3-folds", *Geometry and Topology* 17 (2013), 1955–2059.

7) Pacini, "Special Lagrangian conifolds, I: moduli spaces", *Proc. LMS* (3) 107 (2013), 198–224.

8) Pacini, "Special Lagrangian conifolds, II: gluing constructions", *Proc. LMS* (3) 107 (2013), 225–266.

9) Pacini, "Desingularizing isolated conical singularities: uniform estimates via weighted Sobolev spaces", *Comm. An. and Geom.* 21 (2013), no. 1, 105--170.

10) Gangbo-Kim-Pacini, "Differential forms on Wasserstein space and infinite-dimensional Hamiltonian systems", *Memoirs AMS* 211 (2011), no. 993.

11) Haskins-Pacini, "Obstructions to special Lagrangian desingularizations and the Lagrangian prescribed boundary problem", *Geometry and Topology* 10 (2006), 1453—1521.

12) Pacini, "Deformations of asymptotically conical special Lagrangian submanifolds", *Pacific J. Math.* 215 (2004), no. 1, 151—181.

13) Pacini, "Mean curvature flow, orbits, moment maps", *Trans. Amer. Math. Soc.* 355 (2003), no. 8, 3343—3357.

14) Pacini, "Complex structures on SO(M,g)", *Boll. Unione Mat. Ital. Sez. B Artic. Ric. Mat. (8)* 2 (1999), no. 3, 639—654.

Submitted papers, preprints:
- Pacini, "Extremal length in higher dimensions and complex systolic inequalities", submitted, *available on www.arxiv.org.*

Conference talks:

2019, *12ᵗʰ ISAAC Congress* (special session), Aveiro.

2019, *Complex Analysis and Geometry XXIV*, Levico Terme.

2018, *Complex Geometry and Lie Groups*, Firenze.

2018, *Geometria in Bicocca*, Milano.

2018, *Workshop on geometric analysis and general relativity*, Hong Kong.

2017, *Workshop on G2 manifolds and related topics*, Toronto.

2017, *Constructions of compact exceptional holonomy spaces: past, present and future*, London.

2016, *Extremal Kähler metrics, reductive groups compactifications and stationary Lagrangians,* Crete.

2015, *School and Workshop on Geometric Analysis*, KIAS, Seoul.

2015, *Complex Analysis and Geometry XXII*, Levico Terme.

2015, *Mini-workshop on Differential Geometry*, Sendai.

2015, *7ᵗʰ OCAMI-TIMS-Kobe-Waseda Joint International Workshop on Differential Geometry, Geometric Analysis and Mathematical Physics*, Osaka.

2014, *Lagrangian submanifolds and related topics*, Milano.

2014, *G_2 manifolds*, SCGP, Stony Brook.

2014, *G_2 days 2014*, London.

2014, *First Joint International Meeting RSME-SCM-SEMA-SIMAI-UMI,* Bilbao.

2014, *Carnival Differential Geometry school,* Torino.

2014, *Secondo workshop su varietà reali e complesse*, Pisa.

2012, *Optimal Transportation and Differential Geometry*, BIRS.

2012, *Manifolds with Special Holonomy and their Calibrated Submanifolds and Connections,* BIRS.

2011, *Taiwan international conference on geometry: Special Lagrangians and related topics*, National Taiwan University.

2008, *Giornate di Geometria Algebrica ed Argomenti Correlati*, Trento.

2006, *Southeast Geometry Seminar*, Univ. of Alabama.

2005, *Southeast Geometry Seminar*, Atlanta.

2005, *Recent advances in Calculus of Variations and PDEs*, Pisa.

2003, *Geometry of Lagrangian submanifolds*, IPAM, Los Angeles.

2002, *Proprieta' geometriche delle varieta' reali e complesse. Nuovi contributi italiani*, Palermo.

2002, *Joint conference AMS-UMI*, Pisa.

2001, *Network meeting of the European project on Complex Analysis and Analytic Geometry*, Paris.

1997, *Nuovi contributi italiani alla Geometria Differenziale*, Bari.

Teaching (undergraduate and graduate degree programs):

University of Torino:
- Topics in one complex variable (graduate): 2018-2019.
- Geometry and Linear Algebra (undergraduate): 2017-2018, 2018-2019, 2019-2020.
- Probability and Statistics (undergraduate): 2016-2017.
- Calculus (undergraduate): 2016-2017.
- Riemann surfaces and complex geometry (M.Sc.): 2016-2017, 2017-2018, 2018-2019, 2019-2020.

University of Pisa (School of Engineering):
- Linear Algebra and Geometry (undergraduate): 2016.

Scuola Normale Superiore:
- Introduction to several complex variables (undergrad/grad): 2016.
- Riemann surfaces (undergrad/grad): 2016.
- Complex Analysis (undergraduate): 2014-2015.
- Complex Analysis (undergraduate): 2013-2014.
- Mathematical methods for Chemistry (undergrad/grad): 2012-2013.
- Real Analysis (undergraduate): Exercise sessions, 2009-2010, 2010-2011, 2011-2012, 2012-2013, 2015-2016.

University of Oxford:
- B4 Analysis II (undergraduate): Class tutor, Hilary Term 2008.

Georgia Institute of Technology:
- Differential Geometry (undergrad/grad), Fall 2003.
- Ordinary Differential Equations (undergrad), Spring 2004.
- Calculus 3 (undergrad), Fall 2004.
- Math. methods for Engineers (undergrad/grad), Spring 2005.
- PDE I (undergrad/grad), Fall 2005.
- Calculus 3 (undergrad), Spring 2006.

Teaching (mini-courses, summer programs):

Nesin Mathematical Village (Turkey):
- Conformal invariants and quasi-conformal maps (winter school), 2020.
Centro de Giorgi, Pisa:
- Introduction to the Ricci flow on surfaces (summer school): 2016.
Hokkaido University:
- Introduction to Mean Curvature Flow (first joint Hokkaido/Pisa summer school), 2015.
National Taiwan University:
- Introduction to special Lagrangian geometry (summer school), 2011.
Imperial College:
- Calibrations and special Lagrangian submanifolds (graduate), 2002.

Service:

Organizational activities:
- Co-organizer of the conference "Geom. An, sub.s and geom. PDEs", Torino, 2019.
- Co-organizer of the workshop "Differential Geometry Day", Torino, 2019.
- Co-organizer of the workshop "Zoll metrics and holomorphic discs", Giessen, 2018.
- Co-organizer of the workshop "Pluri-pot. theory and cal. geometry", Torino, 2018.
- Co-organizer of the workshop "Open problems in G2 geom. and rel. topics", Pisa, 2017.
- Co-organizer of the conference "Perspectives in Geometry", Florence 2017.
- Co-organizer of the second joint Hokkaido/Pisa summer school, Pisa, 2016.
- Coordinator of the Geometry/Topology seminar, GT, 2003-2004.
Referee for the following journals:
- Advances in Mathematics;
- Annali della Scuola Normale Superiore;
- Annals of Global Analysis and Geometry;
- Calculus of Variations and PDEs;
- Communications in Analysis and Geometry;
- Geometry and Topology;
- International Mathematics Research Notices;
- J. Differential Geometry;

- J. de l'École Polytechnique – Mathématiques;
- J. Functional Analysis;
- J. Geometric Analysis;
- J. Geometry and Physics;
- J. London Math. Society;
- Mathematische Annalen;
- Muenster Journal of Mathematics;
- Proc. London Math. Society;
- Rendiconti del Circolo Matematico di Palermo;
- Rendiconti del Seminario Matematico della Universita' di Padova;
- Rendiconti del Seminario Matematico dell'Universita' e del Politecnico di Torino;
- SIAM Journal of Mathematical Analysis;
- Trans. Am. Math. Soc.

Other referee work:
- Referee for PhD theses: SISSA (2013), Scuola Normale Superiore (2018).
- Referee for conference proceedings, Seasonal Institute, Math. Soc. of Japan (2018).
- Peer reviewer for grant proposals submitted to EPSRC (UK) , NSERC (Canada).

Ph.D. thesis advisor:
Roberta Maccheroni, Univ. of Parma (graduated 2019).

BA thesis advisor:
Rosa Marchesini, Univ. of Torino (graduated 2018).
Giovanni Ruffinengo, Univ. of Torino (graduation expected 2020).

Committee work:
- Member of the post-doc hiring committee, UniTo (2019).
- Member of the teaching committee, UniTo (2018-onwards).
- Member of the "Collegio dei garanti" which oversees the awarding of a post-doc fellowship in memory of P. de Bartolomeis, UniFi (2017-onwards).
- Member of the PhD admissions committee, UniTo (2017).
- Member of MS admissions committee, UniTo (2017-2018, 2018-2019).
- Member of the PhD admissions committee, SNS (2014-2018).
- Representative at Science Faculty board, SNS (2012-2016).
- Committee member for Master's and doctorate theses defenses and for admission exams, SNS (2010-2016).
- Representative at Committee for Equal Opportunities, SNS (2010-2014).

Other:
- Mathematical activities for elementary school students, Pisa (2015-2016).
- Teaching mentor for graduate students, GT (2004).
- Reviewer for Mathematical Reviews, AMS (2002-2004).