

Dr. Reto Buzano (Müller)

School of Mathematical Sciences, Queen Mary University of London
Mile End Road, London E1 4NS, UK

Phone: +44 (0)207 882 5517, E-mail: r.buzano@qmul.ac.uk
Web: <http://www.maths.qmul.ac.uk/~buzano/>

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Personal Information

Birth: 16 July 1980 in Uster, Switzerland as Reto Müller. Swiss Nationality.
Civil Status: Married to Maria Buzano. Name change to Reto Buzano in 2015.
Languages: Fluent in Swiss German, German and English. Advanced knowledge of Italian.

Expertise

Research: Nonlinear geometric partial differential equations, geometric analysis and the calculus of variations with main focus on geometric heat flows, minimal surfaces, and conformal geometry in higher dimensions.
Teaching: Lecture courses, tutorials, reading classes and seminars at all levels (for Bachelor, Master, and Ph.D. students, as well as postdocs) in mathematics. Experience in teaching courses in English and German.

Education

May 05 – Apr 09 Ph.D. in Mathematics, ETH Zürich
Thesis: Ricci flow coupled with harmonic map heat flow
Advisor: Prof. Michael Struwe
Oct 00 – Apr 05 Diploma in Mathematics with distinction, ETH Zürich
Thesis: Differential Harnack inequalities for parabolic equations
Advisor: Prof. Michael Struwe
Aug 95 – Jan 00 Swiss Matura Type C (Mathematics and Natural Sciences), KZO
Filiale Glattal, Dübendorf (as the best student of my year)

Employment

Oct 17 – Senior Lecturer in Pure Mathematics, Queen Mary University of London
Sep 13 – Sept 17 Lecturer in Pure Mathematics, Queen Mary University of London
Nov 11 – Aug 13 Junior Research Fellow, Imperial College London
Aug 09 – Oct 11 Postdoctoral Research Fellow, Scuola Normale Superiore, Pisa
Jan 10 – Mar 10 Postdoctoral Research Fellow, University of Warwick
May 09 – Jul 09 Postdoctoral Assistant, ETH Zürich
Apr 05 – Apr 09 Teaching Assistant, ETH Zürich
Oct 02 – Mar 05 Tutor and Junior Assistant, ETH Zürich

Grants (as Principal Investigator), Awards and Honours

March 2017	Fellow of the UK Higher Education Academy (FHEA).
Feb 15 – Apr 17	EPSRC First Grant EP/M011224/1 (GBP 125,651).
Nov 14 – Dec 14	Research in Pairs Grant from the London Mathematical Society (GBP 1,200).
Nov 11 – Oct 14	Imperial College Junior Research Fellowship (GBP 124,650).
November 2005	ETH Medal for outstanding Diploma Thesis ¹ .

Selected Publications

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| Articles and preprints | <ul style="list-style-type: none"> • R. Buzano, R. Haslhofer, and O. Hershkovits, <i>The moduli space of two-convex embedded tori</i>, Int. Math. Res. Not. IMRN (to appear). • R. Buzano and H. Nguyen, <i>The higher-dimensional Chern-Gauss-Bonnet formula for singular conformally flat manifolds</i>, Preprint 2017. • R. Buzano, R. Haslhofer, and O. Hershkovits, <i>The moduli space of two-convex embedded spheres</i>, Preprint 2016. • R. Buzano and B. Sharp, <i>Qualitative and quantitative estimates for minimal hypersurfaces with bounded index and area</i>, Trans. Amer. Math. Soc. (to appear). • R. Buzano and M. Rupflin, <i>Smooth long-time existence of Harmonic Ricci Flow on surfaces</i>, J. Lon. Math. Soc. 95 (2017), 277–304. • R. Buzano and H. Nguyen, <i>The Chern-Gauss-Bonnet formula for singular non-compact four-dimensional manifolds</i>, Commun. Anal. Geom. (to appear). • R. Haslhofer and R. Müller, <i>A note on the compactness theorem for 4d Ricci shrinkers</i>, Proc. Amer. Math. Soc. 143, No. 10 (2015), 4433–4437. • R. Haslhofer and R. Müller, <i>Dynamical stability and instability of Ricci-flat metrics</i>, Math. Ann. 360 (2014), 547–553. • C. Mantegazza and R. Müller, <i>Perelman's entropy functional at Type I singularities of the Ricci flow</i>, J. Reine Ang. Math. (Crelle) 703 (2015), 173–199. • R. Haslhofer and R. Müller, <i>A compactness theorem for complete Ricci shrinkers</i>, Geom. Funct. Anal. 21 (2011), 1091–1116. • J. Enders, R. Müller, and P. Topping, <i>On Type I singularities in Ricci flow</i>, Commun. Anal. Geom. 19 No. 5 (2011), 905–922. • R. Müller, <i>Ricci flow coupled with harmonic map flow</i>, Ann. Sci. Ec. Norm. Sup. 45, fascicule 1 (2012), 101–142. • R. Müller, <i>Monotone volume formulas for geometric flows</i>, J. Reine Ang. Math. (Crelle) 643 (2010), 39–57. |
| Book | <ul style="list-style-type: none"> • R. Müller, <i>Differential Harnack inequalities and the Ricci flow</i>, EMS Series Lect. Math. (2006). |

Selection of Organised Seminars, Schools and Workshops

- *Geometric Analysis Day*, Queen Mary University of London (April 2017, as main organiser).
- CIMPA Research School *On Geometric Flows*, Jadavpur University, India (December 2016).
- International workshop *Geometric Flows & Related Topics*, Queen Mary University of London (January 2016, as main organiser).
- Quarterly *Brussels-London Geometry Seminar* (since 2013).
- Weekly research seminar *Geometry and Analysis*, Queen Mary University of London (2014–2017).
- Weekly research seminar *Geometry and Analysis*, Imperial College London (2012–2013).
- Weekly reading group on *Topics in Geometric Analysis*, Imperial College London (2012–2013).
- International workshop *Ricci Solitons Days*, Centro Ennio De Giorgi, Pisa (April 2011).

¹Published in slightly revised and extended version as a book in the EMS Series of Lectures in Mathematics.

Selection of Invited Talks

I have given **over 80 invited talks** in research seminars, workshops and colloquia, at universities in Europe, North America, Australia, India, Korea, and Japan and at major conference centres including BIRS (Banff), CRM (Pisa), Hausdorff Institute (Bonn), KIAS (Seoul), MFO (Oberwolfach), MSRI (Berkeley), etc. The following is a list of selected **talks since 2015**:

- Geometry and Analysis Seminar, University of Oxford (Jan 29, 2018).
- Journée De Géométrie, Université Paris-Est Créteil (Dec 11, 2017).
- Geometry Seminar, Université Libre de Bruxelles (Dec 5, 2017).
- Workshop on Mean Curvature Flow and Ricci Flow, Fields Institute Toronto (Nov 6–10, 2017).
- AG Geometrische Analysis, Karlsruhe Institute of Technology (Jun 27, 2017).
- Seminar on Differential Geometry and Analysis, University of Magdeburg (Apr 27, 2017).
- Differential Geometry Days, University of Turin (Apr 5–7, 2017).
- Geometry Seminar, University of Leeds (Mar 15, 2017).
- EPSRC Symposium on Geometric PDEs, University of Warwick (Dec 12–16, 2016).
- Conference ICAMTPBCS, Calcutta (Dec 9–11, 2016).
- CIMPA-INDIA Research School on Geometric Flows, Calcutta (Dec 4–8, 2016).
- PDE Seminar, University of Oxford (Oct 24, 2016).
- Geometry and Analysis Seminar, Queen Mary University of London (Oct 4, 2016).
- Workshop on Geometric Analysis, Institut Fourier, Grenoble (Jun 27–Jul 1, 2016).
- Workshop on Nonlinear Evolution Equations, Oberwolfach (May 29–Jun 4, 2016).
- Differential Geometry Seminar, University of Turin (Feb 26, 2016).
- Geometry and Analysis Seminar, Queen Mary University of London (Feb 2, 2016).
- Pure Mathematics Seminar, University of Queensland in Brisbane (Jan 27, 2016).
- Geometry Conference, King's College London (Dec 14–18, 2015).
- Geometric Analysis Seminar, Max Planck Institute for Mathematics in Bonn (Aug 19, 2015).
- Oberseminar Analysis, University of Leipzig (Jul 9, 2015).
- Oberseminar Differentialgeometrie, University of Münster (Jun 1, 2015).
- Analysis Seminar, University of Warwick (May 21, 2015).
- Workshop on Geometric Flows, BIRS Banff (Apr 12–17, 2015).
- Geometry and Analysis Seminar, Imperial College London (Feb 5, 2015).
- Geometry and Analysis Seminar, Queen Mary University of London (Feb 3, 2015).

Selection of Teaching Experience

- CIMPA Research School Minicourse on **The Singularity Formation in Mean Curvature Flow and Ricci Flow**, Jadavpur University, Dec 2016 (mainly Ph.D. Students).
- Lecture Course on **Convergence and Continuity**, Queen Mary University of London, taught 4 times in autumn of the years 2013–2016 (2nd Year Students in Mathematics).
- Lectures and Training Sessions for **Third-Year/MSci Projects**, Queen Mary University of London, Sep 14 – Apr 15 (3rd & 4th Year BSc & MSci Students in Mathematics).
- Lecture Course on **Research Methods in Mathematical Sciences**, Queen Mary University of London, Sep 14 – Dec 14 (4th Year MSci and MSc Students in Mathematics, newly created module, jointly taught with Dr. Lucas Lacasa).
- Lecture Course on **Riemannian Geometry**, Imperial College London, Jan 13 – Mar 13 (4th Year MSci and MSc Students in Mathematics).
- Winter School Minicourse on **The Formation of Singularities in the Ricci Flow**, Korea Institute for Advanced Study, Jan 2013 (Ph.D. Students and Postdocs).
- Lecture Course (Oxford based TCC Course) on **Convergence and Collapsing Results in Geometry**, Imperial College London, Oct 12 – Dec 12 (Ph.D. Students, newly created course).
- Lecture Course on **Einstein Manifolds**, University of Pisa, Feb 11 – Jun 11 (MSc Students and Ph.D. Students, newly created course).

Supervision of Students at QMUL

- **PhD Students:**

- Gianmichele Di Matteo (since 2017), as main supervisor.
- Florian Litzinger (since 2017), 2nd supervisor (main supervisor: Huy Nguyen).
- Ali Imad Raad (since 2017), 2nd supervisor (main supervisor: Xin Li).
- Edgar Gasperin Garcia (2013–2017), 2nd supervisor (main supervisor: Juan Valiente Kroon), Thesis: *Applications of conformal methods to the analysis of global properties of solutions to the Einstein field equations.*

- **MSci Project Students:**

- Amina Ladjali (2017–2018).
- Shazada Begum (2017–2018).
- Sania Kibria (2016–2017), Thesis: *On Maximum Principles.*
- Maria Beresford (2014–2015), Thesis: *Closed geodesics on Surfaces.*
- Tanjina Ali (2013–2014), Thesis: *Curve Shortening.*

- **BSc Project Students:**

- Chiagoziem Nwobodo (2015), Thesis: *Maximum Principles.*

Miscellaneous

- **Director of Postgraduate Research Studies (DPGR)**, Queen Mary University of London (since April 2017). Previously Deputy Director of PGR, Recruitment Coordinator, and PGR Admissions Tutor (Sep 2013 – Sep 2015).
- **Editor** for Geometric Flows (De Gruyter Journal).
- **Referee** for over 25 different journals, including Annali SNS, Calc. Var. PDE, Comm. Anal. Geom., Comm. PDE, GAFA, Crelle, JDG, J. Funct. Anal., JEMS, J. Geom. Anal, Math. Ann., Math. Z., and Trans. AMS.
- **Reviewer** for Mathematical Reviews (AMS).
- **External Examiner** for the PhD viva of Michael Coffey, University of Warwick (March 2015) on *Ricci Flow and Metric Geometry.*
- **Member** of the London Mathematical Society (since 2014), European Mathematical Society (since 2012), and the American Mathematical Society (since 2007).