COSTANTE BELLETTINI
Curriculum Vitae

Employment

- from October 2021: Full Professor at UCL (University College London), Department of Mathematics.
- October 2019 - September 2021: Associate Professor at UCL (University College London), Department of Mathematics.
- September 2016 - September 2019: Lecturer at UCL (University College London), Department of Mathematics.
- September 2014 - August 2016: Research Fellow at the University of Cambridge, DPMMS (Department of Pure Mathematics and Mathematical Statistics).
- September 2011 - June 2014: Veblen Research Instructor at Princeton University, Department of Mathematics, and at the Institute for Advanced Study (Princeton).

Education

- October 2006 - May 2011: PhD student in Mathematics at ETH (Swiss Federal Institute of Technology), Zürich.
- July 2007: Diploma in mathematics at the Scuola Normale Superiore, Pisa.
- July 2006: Masters degrees in mathematics, University of Pisa.
- October 2004: 1st level diploma in mathematics at the Scuola Normale Superiore, Pisa.
- July 2004: Bachelor degrees in mathematics, University of Pisa.

Awards

- 2018-2022: EPSRC New Investigator Award (principal investigator).
- Jan-July 2019: Member of the Institute for Advanced Study (Princeton).
- 2012: ETH Medal for distinguished PhD Thesis.

Research interests

Geometric Analysis, Geometric Measure theory, Calculus of Variations,
Calibrated geometries, Elliptic and parabolic PDEs, SubRiemannian Geometry.

Publications and Preprints

- with T. Rivière: *The regularity of Special Legendrian integral cycles*
  Ann. Sc. Norm. Sup. Pisa Cl. Sci. (5) 11 (2012), n.1, 61-142.
- *Almost complex structures and calibrated integral cycles in contact 5-manifolds*
  Adv. Calc. Var. 6 (2013), n.3, 339-374.
- *Tangent cones to positive-*$(1,1)$ *De Rham currents / Les cônes tangents des courants positifs (1,1) de De Rham*
  C. R. Math. Acad. Sci. Paris 349 (2011), 1025-1029.
- *Tangent cones to positive-*$(1,1)$ *De Rham currents*
  J. Reine Angew. Math. 709 (2015) 15-50 DOI 10.1515.
- *Uniqueness of tangent cones to positive-(p,p) integral cycles*
  Duke Math. J. 163, N. 4 (2014), 705-732.
- with E. Le Donne: *Regularity of sets with constant horizontal normal in the Engel group*
  Comm. Anal. Geom. 21 (2013), n.3, 469-507.
- *Rate of decay for the mass ratio of pseudo holomorphic integral 2-cycles*
  Calc. Var. (2015) 54: 3141-3160.
- *Semi-calibrated* 2*-currents are pseudo holomorphic, with applications*
  Bull. Lond. Math. Soc. (2014) 46 (4): 881-888.
- with G. Tian *Compactness results for triholomorphic maps*
  J. Eur. Math. Soc. (2019) 21, 1271-1317.
- with N. Wickramasekera *Stable CMC integral varifolds of codimension* 1*: regularity and compactness*, preprint 2018.
- with O. Chodosh and N. Wickramasekera *Curvature estimates and sheeting theorems for weakly stable CMC hypersurfaces*
  Adv. Math. 352 (2019) 133-157.
- with N. Wickramasekera *Stable prescribed-mean-curvature integral varifolds of codimension* 1*: regularity and compactness*, preprint 2019.
- with E. Le Donne: *Sets with constant normal in Carnot groups: properties and examples*
  Comment. Math. Helv. 96 (2021), pp. 149-198.
- *Multiplicity-1 minmax minimal hypersurfaces in manifolds with positive Ricci curvature*, preprint 2020.
- with N. Wickramasekera *The inhomogeneous Allen–Cahn equation and the existence of prescribed-mean-curvature hypersurfaces*, preprint 2020.
- *Generic existence of multiplicity-1 minmax minimal hypersurfaces via Allen–Cahn*, preprint 2020.
- *Embeddedness of liquid-vapour interfaces in stable equilibrium*, preprint 2021.

Invited speaker-seminars

March 31 2009, *ETH Zürich*,
Feb. 22 2011 and Feb. 25 2011 *Imperial College, London*,
June 01 2011 *University of Cambridge*,
Oct. 07 2011: *Princeton University*,
Nov. 10 2011 *Columbia University*,
Nov. 17 2011 *Institute for Advanced Study*,
June 28 2012 *MIS Leipzig*,
Sept. 25 2012 *ETH Zürich*,
Nov. 12 2012 *Johns Hopkins University*,
March 7 2013 *CUNY*,
March 25 2013 *University of Toronto*,
Apr. 9 2013 *Institute for Advanced Study*,
Apr. 17 2013 *Rice University*,
Nov. 26 2013 *Courant Institute (NYU)*,
Feb. 20 2014 *University of California, Santa Cruz*,
Oct. 17 2014 *Princeton University*,
Nov. 6 2014 *University of Warwick*,
Nov. 20 2014 *Imperial College, London*,
Dec. 4 2014 *AEI Potsdam*,
Dec. 9 2014 *UCL/King's College*,
Dec. 12 2014 *Cambridge-Imperial-Warwick postdoc meeting*,
Sept. 17 2015 *Courant Institute (NYU)*,
Sept. 21 2015 *Northwestern University*,
Sept. 25 2015 *Princeton University*,
Oct. 12 2015 *University of Cambridge*,
Feb. 24 2016 *University of Leeds*,
Apr. 12 2016 *ETH Zürich*,
Apr. 4 2017 *Princeton University*,
Oct. 19 2017 *University of Bath*,
Nov. 24 2017 *Scuola Normale Superiore, Pisa*,
Jan. 24 2018 *UCL/KCL*,
Mar. 28 2018 *Courant Institute (NYU)*,
Apr. 10 2018 *University of Chicago*,
Oct. 31 2018 *University of Leeds*,
Apr. 2 2019 *Institute for Advanced Study*,
Apr. 16 2019 *Rutgers University*,
Sept. 16 2019 *University of Connecticut*,
June 17 2020 *Princeton University*,
Nov. 4 2020 *Stanford and UCSD geometric analysis colloquium*,
Feb. 16 2021 *University of Chicago*,
May 25 2021 *Brussels-Oxford-Warwick-London geometry seminar*,
May 27 2021 *Roma Tor Vergata*,
June 1 2021 *Hebrew University Jerusalem*.

Invited speaker-conferences, schools, workshops

Jan. 13 2011 ERC School on Analysis in Metric Spaces and Geometric Measure Theory, *Centro De Giorgi/Scuola Normale Superiore, Pisa.*

Apr. 25 2012: Workshop on Mean Curvature Flow, Low-dimensional Topology and Related Topics, *MIT.*

July 04 2012: Conference "Geometric Measure Theory", *AEI Potsdam.*

Apr. 27 2013: Workshop on minimal surfaces, 3-dimensional manifolds and related topics, *MIT.*

July 29 - Aug 2 2013: Workshop on Geometric Measure Theory and Optimal Transport, *ICTP Trieste.*

Sept. 23-27 2013: Summer School "Metric and variational structures in singular varieties", *Chambery.*

Oct. 7-11 2013: ERC Workshop on Analysis in Metric Spaces, *Centro De Giorgi/SNS.*

Dec. 16-20 2013: BIRS Workshop on Geometric variational problems, *Banff, Canada.*

March 17-18 2014: Workshop on Geometric PDEs, *Mathematical Institute, Oxford.*

July 13-19 2014: Workshop on Calculus of Variations, *Oberwolfach.*

June 1-5 2015: Conference "Recent trends in Geometric Analysis", *Carry-Le-Rouet.*

June 15-17 2015 Workshop "Geometric Analysis, Free Boundary Problems and Measure Theory" *MPI Leipzig.*

March 15-16 2016 "Oxbridge PDE conference", joint *Oxford-Cambridge.*

July 11-15 2016: Workshop on Calculus of Variations, *Oberwolfach.*

October 26-29 11-15 2016: Workshop on GMT, Shape Optimisation, Free Boundaries *SISSA Trieste.*

December 12-16 2016: Geometric PDE Workshop, *Warwick.*

January 4-7 2017: Singularities, Symmetries and Submanifolds (Japan-UK conference) *University College London.*

June 6-9 2017: Advances in Geometric Analysis *ETH Zürich.*

September 4-8 2017: Fourth Taiwan International Conference on Geometry, *National Taiwan University, Taipei.*

June 4-8 2018: Recent advances in Geometric Analysis *Centro De Giorgi/SNS Pisa.*

December 17-19 2018: Workshop in Geometric Analysis *Institut Henri Poincaré, Paris.*

March 22-24 2019: Special Session on Analysis of Nonlinear Geometric Equations, University of Hawai'i at Mānoa, *AMS Spring Central and Western Joint Sectional Meeting.*

March 22-24 2019: Special Session on New Trends in Geometric Measure Theory, University of Hawai'i at Mānoa, *AMS Spring Central and Western Joint Sectional Meeting.*

June 3-7 2019: Special Holonomy and Calibrated Geometry, Imperial College (2 lectures), *Simons Collaboration on Special Holonomy in Geometry, Analysis and Physics.*

June 15-19 2020 (postponed to 2022): Summerschool/workshop "Geometric analysis and calibrated geometries" *ETH Zürich.*

August 3-7 2020: Workshop on Calculus of Variations, *Oberwolfach.*

July 26-30 2021: Workshop on Partial Differential Equations, *Oberwolfach.*

Teaching experience

Undergraduate classes (at ETH)

- Fall 2007/2008: **Analysis 1** (One-variable Calculus) for Engineers, exercise classes.
- Spring 2007/2008: **Functional Analysis**, exercise classes.
- Fall 2008/2009: **Partial Differential Equations** (for Chemistry), coordination of the exercise classes.
- Spring 2008/2009: **Measure Theory and Integration**, coordination of the exercise classes.
- Fall 2010/2011: **Analysis 1** (One-variable Calculus) for Information Scientists, coordination of the exercise classes.
- Spring 2010/2011: **Analysis 2** (Multi-variable Calculus) for Information Scientists, coordination of the exercise classes.

Graduate classes (at ETH)

- Spring 2009/2010: **Regularity questions in calibrated geometry**.

Undergraduate classes (at Princeton)

- Fall 2011/2012: **Linear Algebra and Multivariable Calculus for Economists**, instructor.
- Spring 2011/2012: **Linear Algebra with Applications**, instructor.
- Fall 2013/2014: **Multivariable Calculus**, instructor.
- Spring 2013/2014: **Linear Algebra with Applications**, instructor.

Master level classes (Part III courses) (at Cambridge)

- Spring 2014/2015: **Elliptic Partial Differential Equations**.
- Spring 2015/2016: **Elliptic Partial Differential Equations**.

Undergraduate classes (at UCL)

- Fall 2016/2017: **Measure Theory**.
- Spring 2016/2017: **Analysis 2** (problem class).
- Fall 2017/2018: **Measure Theory**.
- Spring 2017/2018: **Analysis 2** (problem class).
- Fall 2018/2019: **Measure Theory**.
- Fall 2018/2019: **Analysis 1** (problem class).
- Fall 2019/2020: **Measure Theory**.
- Fall 2019/2020: **Analysis 1** (problem class).
- Fall 2020/2021: **Measure Theory**.
- Fall 2021/2022: **Measure Theory**.
- Spring 2021/2022: **Elliptic Partial Differential Equations**.

Supervision/ Mentoring

- Kobe Marshall-Stevens (PhD student), UCL, 2020-2024.
- Konstantinos Leskas (PhD student), UCL, 2018 - 2022.
- Myles Workman (PhD student), UCL (LSGNT) 2021-2024.
- Myles Workman (LSGNT 1st year project), UCL, 2020/21.
- Fritz Hiesmayr (postdoctoral research associate, EP/S005641/1), UCL 2019-2021.
- James Tissot (LMS undergraduate research bursary), UCL 2021.
- Timothy Johnston (EPSRC undergraduate research bursary), UCL 2019.
- Timothy Johnston (4th year project - Master level thesis), UCL 2019/20.
- Sebastian Lunz (Part III essay - Master level thesis), Cambridge, 2016.

Organization/ Service

- Management committee member for the LSGNT (London Doctoral centre, 2018-present).
- Co-organization of the *B.O.W.L. geometry seminar* (2020-present).
- Co-organization of the *KCL/UCL geometry seminar* (2019/20).
- Co-organization of the *London Geometric Analysis Reading Seminar* (2018-present).
- Deputy chair of the Department Teaching Committee (2019-present, at UCL).
- Geometry and Topology area leader for second year group projects (2019-present).
- Leader of the working group for Geometry in the teaching committee (2019, at UCL).
- Internal (3, UCL) and external (2: Cambridge, Jyväskylä) examiner for PhD vivas.
- Organization of the *Differential Geometry & Geometric Analysis Seminar* (2012-2014, at Princeton).
- Referee for top international journals.

Languages

- Italian (primary)
- English (fluent)
- French (good)
- German (good)