Curriculum vitae of Alberto Della Vedova[*]

September 27, 2022

Personal data

First Name: Alberto

Last Name: Della Vedova

Date of birth: October 24th, 1978

Place of birth: Cuggiono (MI) - Italy

Citizenship: Italian

Home address:

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 20866 Carnate (MB) - Italy

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Working address:

 Università degli Studi di Milano-Bicocca

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Employment

2020 –   Associate professor in Mathematics at University of Milano-Bicocca (Italy)

2017 – 2020 Assistant professor (RTD-B) in Mathematics at University of Milano-Bicocca (Italy)

2016 – 2017 Assistant professor (RTD-A) in Mathematics at University of Milano-Bicocca (Italy)

2014 – 2016 Post-doc researcher in Mathematics at University of Milano-Bicocca (Italy)

2010 – 2013 Post-doc researcher in Mathematics at University of Parma (Italy)

2010 – 2012 Visiting Postdoctoral Research Associate at Princeton University (USA)

2005 – 2009 Post-doc researcher in Mathematics at University of Parma (Italy)

Education

2002 – 2005

 Ph.D. in Mathematics at Univerity of Milano-Bicocca (Italy)

 Title of the Thesis: "Asymptotic growth of equivariant sections for linearized actions on complex projective manifolds"

 Advisor: prof. R. Paoletti

1997 – 2002

    Laurea (Degree) in Mathematics at University of Milano (Italy)

    Title of the Thesis: "Ottonioni, Gruppi eccezionali e Varietà di Severi"

    Advisor: prof. P. Cotta-Ramusino

    Final grade: 110/110 cum laude

Grants

2017 – 2020 Research grant FFABR from MIUR (Italian Ministry of Education, Universities and Research)

2014 – 2017 Research grant (ex art. 22, L. 240/2010) from University of Milano-Bicocca

2010 – 2013 Marie Curie FP7-PEOPLE-2009-IOF from European Union - Grant number 255579

2005 – 2009 Research grant (ex art. 51, c. 6, L. 449/1997) from University of Parma

2002 – 2005 Ph.D. grant from University of Milano-Bicocca

Projects

FIRB 2012 "Geometria Differenziale e Teoria Geometrica delle Funzioni". Member of Parma unit.

PRIN 2010–2011 "Varietà reali e complesse: geometria, topologia e analisi armonica". Member of Parma unit.

PRIN 2007 "Proprietà geometriche delle varietà reali e complesse". Member of Parma unit.

Organization

9/2019 Workshop "Geometria in Bicocca 2019". Università di Milano-Bicocca, IT.

12/2018 Workshop "A day in Riemannian Geometry and related topics". Università di Milano-Bicocca, IT.

5/2018 Workshop "Geometria in Bicocca 2018". Università di Milano-Bicocca, IT.

2/2016 Workshop "Geometria in Bicocca 2016". Università di Milano-Bicocca, IT

2/2015 Workshop "Geometria in Bicocca 2015". Università di Milano-Bicocca, IT.

Schools, conferences and workshops

7/2021 "Cohomology of Complex Manifolds and Special Structures - II". CIRM, Levico Terme (Trento, IT).

6/2021 "CIRM-ICTP Complex Analysis and Geometry - XXV". CIRM, Levico Terme (Trento, IT).

9/2019 "Geometric Analysis, Submanifolds, and Geometry of PDE's". Torino, IT.

9/2019 "XXI Congresso. Unione Matematica Italiana". Pavia, IT.

6/2019 "Complex Analysis and Geometry - XXIV". CIRM, Levico Terme (Trento, IT).

1/2018 "Informal Geometry Workshop in 'Paradiso'". Cogne (Aosta, IT).

4/2017 "School - Flows and Limits in Kähler Geometry". Nantes, FR.

10/2016 "Kähler-Einstein families". Centro De Giorgi. Pisa, IT.

9/2015 "XX Congresso. Unione Matematica Italiana". Siena, IT.

1/2015 "A Geometry day in Como 2015". University of Insubria, Como, IT.

10/2014 "Progressi Recenti in Geometria Reale e Complessa - IX". CIRM, Levico Terme (Trento, IT).

6/2014 "Asymptotic aspects of complex and algebraic geometry". University of Milano-Bicocca, Milano, IT.

6/2013 "Complex Analysis and Geometry - XXI". CIRM, Levico Terme (Trento, IT).

12/2012 "Recent Developments in Kaehler Geometry". Institut Henri Poincaré, Paris, FR.

11/2012 "Workshop MACK5". École Française de Rome, IT.

10/2012 "The 18th International Symposium on Complex Geometry (Sugadaira symposium)". Sugadaira, JP.

10/2012 "Progressi Recenti in Geometria Reale e Complessa". CIRM, Levico Terme (Trento, IT).

6/2012 "School and conference on Geomretic Analysis". ICTP (Trieste, IT).

9/2012 "Complex Algebraic Geometry". MFO, Oberwolfach, DE.

6/2011 "Complex Analysis and Geometry - XX". CIRM, Levico Terme (Trento, IT).

3/2011 "Simons Workshop on Kähler Geometry". Simons Center for Geometry and Physics, Stony Brook, USA.

2/2011 "Extremal metrics: evolution equations and stability". CIRM, Marseille, FR.

6/2010 "Complex Geometry". CIRM, Levico Terme (Trento, IT).

5/2010 "Geometria in Bicocca". University of Milano-Bicocca, Milano, IT.

11/2009 "Conference on Kaehler and related geometries". Laboratoire Jean Leray, Nantes, FR.

7/2009 "Extremal Kähler metrics". BIRS, Banff, CDN.

6/2009 "Kähler and Sasakian Geometry in Rome". Università la Sapienza e Università Roma tre, Roma, IT.

6/2009 "Complex Analysis and Geometry - XIX". CIRM, Levico Terme (Trento, IT).

1/2009 "Recenti Sviluppi in Geometria Complessa e Simplettica". Centro di Ricerca Matematica Ennio De Giorgi, Pisa, IT.

10/2008 "Progressi Recenti in Geometria Reale e Complessa". CIRM, Levico Terme (Trento, IT).

6/2008 "School and Conference on Differential Geometry". ICTP, Trieste, IT.

5/2008 "Recent Advances in Geometry and Topology of Submanifolds". Università la Sapienza, Roma, IT.

3/2008 "Extremal Kaehler Metrics and Kaehler-Ricci Flow". Centro di Ricerca Matematica Ennio De Giorgi, Pisa, IT.

6/2007 "Algebraic Geometry in Higher Dimensions". CIRM, Levico Terme (Trento, IT).

5/2007 "Complex Analysis and Geometry - XVIII". CIRM, Levico Terme (Trento, IT).

9/2006 "Topologia delle varietà algebriche complesse". Alghero, IT.

5/2006 "Giornate di Geometria Algebrica ed argomenti correlati VIII". Scuola Internazionale Superiore di Studi Avanzati, Trieste, IT.

3/2006 "Recenti sviluppi della geometria complessa, differenziale, simplettica". Centro di Ricerca Matematica Ennio De Giorgi, Pisa, IT.

7/2005 "AMS Summer Research Institute in Algebraic Geometry". University of Washington, Seattle, USA.

6/2004 MRI Spring School 2004, "Lie groups in Analysis, Geometry and Mechanics". University of Utrecht, NL.

4/2004 "Algebraic curves, monodromy and related topics". Politecnico di Milano, Milano, IT.

Research visits

11/2012 Ten-days stay at ICTP (Trieste, IT) at the invitation of prof. C. Arezzo.

2-5/2012 Four-months stay at BICMR (Beijing, CN) at the invitation of prof. G. Tian.

2/2012 One-week stay at SCGP (Stony Brook, NY) at the invitation of prof. C. Teleman.

1/2012 One-week stay at ICTP (Trieste, IT) at the invitation of prof. C. Arezzo.

1/2011 One-week stay at ICTP (Trieste, IT) at the invitation of prof. C. Arezzo.

11-12/2009 Four-weeks stay at Mathematics department of Yeshiva University of New York, NY (USA) at the invitation of prof. G. La Nave.

2/2009 one-week stay at Johns Hopkins University of Baltimore, MD (USA) at the invitation of Ph.D. Y. A. Rubinstein.

10-12/2008 "Junior Trimester Program on Analysis (and workshop on Geometric Analysis)". Hausdorff Research Institute for Mathematics, Bonn, DE.

10-12/2007 Three-months stay at Mathematics department of Princeton University, NJ (USA) at the invitation of prof. G. Tian.

4/2007 Three-weeks stay at Mathematics department of Princeton University, NJ (USA) at the invitation of prof. G. Tian.

Invited talks

6/7/2021 "Futaki invariants and constant scalar curvature Kähler metrics on orbifold resolutions". Cohomology of Complex Manifolds and Special Structures II. CIRM, Levico Terme (Trento, IT).

3/7/2020 "Chern-Einstein metrics on symplectic manifolds". Virtual meeting in Special Geometries and Gauge Theory. LMBA (Brest, FR).

6/9/2019 "Metriche almost-Kähler Chern-Einstein omogenee". XXI Congresso U.M.I. (Pavia, IT).

11/6/2019 "Special metrics on symplectic manifolds". Complex Analysis and Geometry - XXIV. CIRM, Levico Terme (Trento, IT).

22/1/2018 "Special almost complex structures on symplectic manifolds". Informal Geometry Workshop in 'Paradiso'. (Cogne, IT).

14/7/2017 "Strutture quasi complesse speciali su varietà simplettiche". Università di Firenze, IT.

8/9/2015 "Sul problema di prescrizione della curvatura scalare Hermitiana su varietà simplettiche". XX Congresso U.M.I. (Siena, IT).

3/6/2015 "On the curvature of symplectic manifolds". Università di Milano Bicocca, IT.

25/3/2015 "On prescribing Hermitian curvature on symplectic manifolds". Università di Parma, IT.

22/10/2014 "On the curvature of conic Kähler-Enstein metrics". Progressi Recenti in Geometria Reale e Complessa IX. CIRM, Levico Terme (Trento, IT).

4/6/2013 "Geometric flows and Kaehler reduction". Complex Analysis and Geometry - XXI. CIRM, Levico Terme (Trento, IT).

14/3/2013 "Metriche estremali su varietà Kaehleriane". Università di Parma, IT.

9/11/2012 "On the uniqueness of extremal Kaehler metrics". Workshop MACK5. École Française de Rome, IT.

25/10/2012 "On the uniqueness of extremal Kaehler metrics". The 18th International Symposium on Complex Geometry (Sugadaira symposium). Sugadaira, JP.

16/10/2012 "On the uniqueness of extremal Kaehler metrics". Progressi Recenti in Geometria Reale e Complessa VIII. CIRM, Levico Terme (Trento, IT).

29/6/2012 "On the uniqueness of extremal Kaehler metrics". School and conference on Geomretic Analysis. ICTP Trieste, IT.

11/5/2012 "On blowing up extremal Kaehler manifolds". BICMR, Peking, CN.

22/2/2012 "Geometry of moment map". BICMR, Peking, CN.

7/2/2012 "Scalar curvature and asymptotic Chow stability of projective bundles and blowups". Program: "Algebraic Topology and Physics". SCGP, Stony Brook, NY (USA).

19/1/2012 "On the uniqueness of extremal Kaehler metrics". ICTP, Trieste, IT.

8/12/2011 "Geometry of moment map". Geometry working seminar. Princeton University, NJ (USA).

14/6/2011 "Scalar curvature and asymptotic stability of projective bundles and blow-ups". Complex Analysis and Geometry - XX. CIRM, Levico Terme (Trento, IT).

11/2/2011 "Scalar curvature and asymptotic Chow stability of projective bundles and blow-ups". Extremal metrics: evolution equations and stability. CIRM, Marseille, FR.

19/10/2010 "Quantisation and the Hessian of Mabuchi Energy". Geometry working seminar. Princeton University, NJ (USA).

26/5/2010 "On the asymptotic Chow stability of some constant scalar curvature polarized manifolds". Università di Parma, IT.

7/5/2010 "On the asymptotic Chow stability of some constant scalar curvature polarized manifolds". Geometria in Bicocca. Università di Milano Bicocca, IT.

3/12/2009 "K-stability and singularities". Yeshiva University, NY (USA).

1/7/2009 "K-stability and singularities". Extremal Kaehler metrics. BIRS, Banff, CDN.

25/2/2009 "Examples of Fano 3-folds". Kaehler geometry through examples seminar. Johns Hopkins University, Baltimore, MD (USA).

24/2/2009 "Geometric obstructions to the existence of extremal Kaehler metrics on blow-ups". Johns Hopkins University, Baltimore, MD (USA).

26/11/2008 "CM-stability of blow-ups and canonical metrics". Trimester seminar within the Junior Trimester Program on Analysis (and workshop on Geometric Analysis). Hausdorff Research Institute for Mathematics, Bonn, DE.

23/10/2008 "Stabilità CM di varietà scoppiate e metriche canoniche". Progressi Recenti in Geometria Reale e Complessa. CIRM, Levico Terme (Trento, IT).

6/2/2007 "Metriche estremali su scoppiamenti: un risultato di non-esistenza". Università di Milano-Bicocca, IT.

27/5/2006 "Mappe momento e volumi equivarianti". Giornate di Geometria Algebrica ed argomenti correlati VIII. SISSA, Trieste, IT.

Services

Peer-reviewer for mathematical journals including Annals of Mathematics, Journal of Differential Equations, Journal für die reine und angewandte Mathematik (Crelle's journal), Proceedings of the Edinburgh Mathematical Society, Rivista Matematica dell'Università di Parma, and Transactions of the American Mathematical Society.

Teaching experience

Fall 2021 One-semester course in Differential Geometry at University of Milano-Bicocca (Italy).

       One-semester course in Linear Algebra at University of Milano-Bicocca (Italy).

       One-semester course in Mathematics for Biotechnology at University of Milano-Bicocca (Italy).

Fall 2020 One-semester course in Differential Geometry at University of Milano-Bicocca (Italy).

       Recitations in Linear Algebra at University of Milano-Bicocca (Italy).

       One-semester course in Mathematics for Biotechnology at University of Milano-Bicocca (Italy).

Spring 2019-2020 One-Semester course in General Topology at University of Milano-Bicocca (Italy).

Spring 2018 PhD course on 'Kähler-Einstein metrics' within the Pavia - Milano Bicocca - INdAM PhD program (Italy).

Fall 2015-2017 One-semester course in Differential Geometry at University of Milano-Bicocca (Italy).

       Recitations in Linear Algebra at University of Milano-Bicocca (Italy).

Spring 2015 One-semester course in Complex Geometry at University of Milano-Bicocca (Italy).

Spring 2013 One-semester course in Algebraic Geometry at University of Parma (Italy).

Fall 2011 Short course in Riemannian Geometry at Kigali Institute of Science and Technology (Rwanda) - Within a school on "Introduction to Riemannian Geometry" organized by ICTP (Trieste) and ISP (Sweden).

Spring 2009 Recitations in Classical Geometry at University of Parma (Italy).

Fall 2006, Spring 2008 One-semester course in Foundations of Calculus at University of Parma (Italy).

Fall 2005 Recitations in Algebraic Geometry at University of Pavia (Italy).

Fall 2004-2005 Recitations in Foundation of Mathematics at University of Milano-Bicocca (Italy).

Fall 2003 Recitations in Calculus II at University of Milano-Bicocca (Italy).

Spring 2003-2005 Tutorship in Mathematics for Social Science at University of Milano-Bicocca (Italy).

Thesis supervised

PhD

12/2019 Alice Gatti, "Special almost-Kähler geometry of some homogeneous manifolds". Dottorato di ricerca in Matematica (Pavia - Milano Bicocca - INdAM).

Master degree

3/2021 Hajg Jasa, "The Schoen-Yau Positive Mass Theorem". LM in Matematica (Milano-Bicocca).

7/2019 Paolo Piantedosi, "L'ipotesi di varietà: un algoritmo per testarla". LM in Matematica (Milano-Bicocca).

Bachelor degree

All these theses have been or are expected to be defended at the University of Milano-Bicocca

11/2021 Tommaso Carazzato, "Rigidità della sfera di Riemann". LT in Matematica.

Matteo Agosti, "Il teorema Egregium". LT in Matematica.

Zilfije Berberi, "Il teorema dell'indice di Whitney". LT in Matematica.

Marco Manenti, "Rigidità della sfera euclidea". LT in Matematica.

9/2021 Lorenzo Barbato, "Geometria dello spazio dei moduli dei tori complessi". LT in Matematica.

Marco Sangalli, "Teoria dei nodi e superfici di Seifert". LT in Matematica.

Davide Bafaro, "Il problema isoperimetrico nel piano". LT in Matematica.

7/2021 Federico Alberto Astolfi, "Una introduzione alla teoria di Morse". LT in Matematica.

Marco Milanesi, "Una dimostrazione topologica del teorema di Abel-Ruffini". LT in Matematica.

Marco Pedemonti, "Le superfici minimali attraverso la rappresentazione di Weierstrass". LT in Matematica.

3/2020 Andrea Cataldo, "Curvatura gaussiana e teorema fondamentale dell'algebra". LT in Matematica.

11/2018 Hajg Jasa, "Il Teorema di non-squeezing di Gromov". LT in Fisica.

3/2018 Daniele Dell'Oro, "Il teorema di invarianza di dominio". LT in Matematica.

Marco Pievani, "La formula di Eulero". LT in Matematica.

2/2018 Andrea Mariani, "Sfere esotiche di Milnor". LT in Matematica.

11/2017 Maurizio Grimoldi, "Il teorema di classificazione delle superfici topologiche compatte". LT in Matematica.

Paolo Piantedosi, "Forme differenziali e teorema di Gauss-Bonnet". LT in Matematica.

9/2017 Marco Ronchese, "Connections on Principal and Vector Bundles". LT in Matematica.

7/2017 Stefano Ronchi, "Hyperbolic 3-manifolds by gluing polyhedra". LT in Matematica.

11/2016 Alice Mazzola, "La formula del punto Fisso di Lefschetz". LT in Matematica.

7/2016 Chiara Bai, "Superfici di Riemann compatte e Teorema di Riemann-Roch". LT in Matematica.

Research Interests

Equivariant asymptotic invariants of linearized line bundles. Existence of canonical metrics (Kähler-Einstein, extremal-Kähler and Kähler-Ricci solitons) on projective manifolds. Existence of canonical metrics in connection with geometric stability. Yau-Tian-Donaldson conjecture. Symplectic topology by special almost Kähler metrics. Homogeneous special almost Kähler metrics. Almost-Kähler geometry of adjoint orbits of semi-simple Lie groups. Soliton equations associated to exceptional Lie groups. Geometric aspects of integrable systems.

Ongoing research projects

C. Arezzo, ADV, Y. Shi, "Constant scalar curvature Kähler metrics on ramified Galois coverings".
  Resting on recent deep results by X. Chen and J. Cheng on the existence of constant scalar curvature Kähler (cscK) metrics, we give new existence results for that kind of metrics on manifolds that admit a ramified Galois covering over a manifold carring a cscK metric, under suitable hypotheses on the branching divisor.

S. Borghini, ADV, "Mass on asymptotically complex hyperbolic Kähler-Einstein manifolds".
  We revise the notion of mass for (locally) complex-hyperbolic metrics, refining the positive mass theorem of D. Maerten and V. Minerbe.

ADV, A. Gatti, "Classification of special adjoint orbits of semisimple Lie groups".
  By Lie-theoretic methods, we give a complete characterization of adjoint orbits of semi-simple Lie groups that satisfy the equation $\rho = \lambda\omega$ for some real λ, where ω is the Kirillov-Kostant-Souriau symplectic form and ρ is the Chern-Ricci form of the canonical compatible almost-complex structure on the orbit.

Post-doc mentoring

2020– Stefano Borghini (University of Milano-Bicocca)

Publications and preprints

Preprints

C. Arezzo, ADV and L. Mazzieri, "K-stability, Futaki invariants and cscK metrics on orbifold resolutions". arXiv:1808.08420.

ADV, "CM-stability of blow-ups and canonical metrics". arXiv:0810.5584.

ADV and R. Paoletti, "Equivariant volumes for linearized actions". math.AG/0412433.

Scientific papers

ADV and A. Gatti, "Almost Kaehler geometry of adjoint orbits of semisimple Lie groups". *Math. Z.* 301 (2022), no. 3, 3141–3183.

C. Arezzo and ADV, "Big and nef classes, Futaki Invariant and resolutions of cubic threefolds". To appear in: *Geometric Analysis. In Honor of Gang Tian's 60th Birthday.* Progress in Mathematics, 333 (2020). Birkhäuser Basel.

ADV, "Special homogeneous almost complex structures on symplectic manifolds". *Journal Symplectic Geom.* 17 (2019), no. 5, 1251–1295.

C. Arezzo, ADV, R. Lena, L. Mazzieri, "On the Kummer construction for Kcsc metrics". *Boll. Unione Mat. Ital.* 12 (2019), no. 1-2, 83–132.

C. Arezzo, ADV and G. La Nave, "On the curvature of conic Kähler-Einstein metrics". *J. Geom. Anal.* 28 (2018), 265–283.

ADV, P. Lorenzoni and A. Savoldi, "Deformations of non semisimple Poisson pencils of hydrodynamic type". *Nonlinearity*. 29 (2016), no. 9, 2715–2754.

ADV, "A note on Berezin-Toeplitz quantization of the Laplace operator". *Complex Manifolds*. 2 (2015), 131–139.

C. Arezzo, ADV and G. La Nave, "Geometric flows and Kähler reduction". *Journal Symplectic Geom.* 13 (2015), no. 2, 497–525.

ADV, F. Zuddas, "Scalar curvature and asymptotic Chow stability of projective bundles and blowups". *Trans. Amer. Math. Soc.* 364 (2012), no. 12, 6495–6511.

C. Arezzo, ADV, and G. La Nave, "K-Destabilizing test configurations with smooth central fiber". In: Variational Problems in Differential Geometry (Leeds 2009). London Mathematical Society LNS 394. Cambridge University Press (2012).

C. Arezzo, ADV and G. La Nave, "Singularities and K-semistability". *Int. Math. Res. Not.* (2012) Vol. 2012 849-869 doi:10.1093/imrn/rnr044.

C. Arezzo and ADV, "On the K-stability of complete intersections in polarized manifolds". *Adv. Math.* 226 (2011), no. 6, 4796–4815.

P. Casati, ADV and G. Ortenzi, "The Soliton Equations associated with the Affine Kac-Moody Lie Algebra $G_2^{(1)}$". *J. Geom. Phys.* 58 (2008), 377–386.

ADV and R. Paoletti, "Moment maps and equivariant volumes". *Acta Math. Sin.* (Engl. Ser.) 23 (2007), no. 12, 2155–2188.

S. Cacciatori, B. L. Cerchiai, ADV, G. Ortenzi and A. Scotti, "Euler angles for G_2". *J. Math. Phys.* 46 (2005), no. 8, 083512, 17 pp.

General audience papers

ADV, "Da Eulero a Lloyd Wright: topologia e architettura". *Presenza Tecnica in edilizia*, no. 231 Nov-Dec 2007.

Milano – September 27, 2022