

CURRICULUM VITÆ

Luca Migliorini

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Place and date of birth : Firenze (Italy) June 3, 1961.

Education:

- Student in the Ph. D. Program in Mathematics, Università di Firenze, November 1987-May 1990; “Special student” under the direction of Y.T. Siu, January 1988–June 1989 at Harvard University, Cambridge (MA).
- Laurea *cum laude* in Mathematics, 27 June 1985, Università di Firenze.

Compulsory Service in the Army April 1986-July 1987; Lieutenant since July 1986.

Research interests

Hodge theory, perverse sheaves and their applications to algebraic geometry and representation theory. The Hitchin fibration.

Tenured Positions

- 11/2001– : Università di Bologna: Full Professor.
- 11/1999-10/2001 : Università di Trento: Associate Professor.
- 05/1990–10/1999 : Università di Firenze: Research Fellow.

Selected Temporary positions and Invitations

As a short time guest

- 12/2018: Department of Mathematics, University of Sydney
- 12/2018: Department of Mathematics, University of Melbourne
- 06/2013: Department of Mathematics, State University of New York at Stony Brook.

- 02/2013 Institut für Mathematik, University of Essen.
- 02/2013 Institut für Mathematik, University of Mainz.
- 05/2012 Max Planck Institut für Mathematik, Bonn.
- 04/ 2011: Mathematics Department, Instituto Superior Técnico, Lisboa.
- 03/ 2011: Mathematics Department, University of Genève.
- 01/2010, 02/2008: Mathematical Institute, Oxford University.
- 04/2009: Institut des Mathématiques, Université de Genève;
- 11/2008: Mathematisches Institut, University of Bonn.
- 02/2005: Institute for Advanced Study, Princeton.

Invitations for longer periods

- 02–04/2015 Member of the School of Mathematics of the Institute for Advanced Study, Princeton for the special year "Topology of Algebraic varieties" organized by B. Totaro, C. Voisin.
- 01–02/2014 Bernoulli Center of EPFL, Lausanne.
- 09–10/2013, 01–02/2012 Max Planck Institut für Mathematik, Bonn.
- 02/ 2011, 09/2011: Mathematics Department, University of Freiburg.
- 05/2010: Institut Henri Poincaré, Paris, for the "Trimestre de Géométrie Algébrique Complexe".
- 01–05/2007: Institute for Advanced Study, Princeton; Member of the School of Mathematics.
- 12/2006: Centro Matematico E. De Giorgi, Pisa; Visiting Professor.
- 10-11/2006, 9/2007: International Center for Theoretical Physics "Abdus Salam" in Trieste; Visitor.

Scientific Activity

A selection of talks as invited speaker in international workshops in the last years

- Workshop "Moduli spaces representation theory and quantization" RIMS Kyoto, 24-28/6/2019.
- Workshop "Algebraic analysis and geometry with a view on Higgs bundles and D-modules", Porto, 3-7/6/2019.
- Workshop "Lie groups Invariant theory and Complex geometry" in honor of Peter Heinzner, Essen June 2017.
- Workshop "Perspective in Geometry" in memory of Paolo de Bartolomeis, Firenze, January 2017.
- Plenary speaker at the conference of the Italian Mathematica Union, September 2015.
- Workshop "Refined invariants in geometry, topology and string theory", BIRS, Banff (Canada), June 2013.
- Workshop "Recent trends in Algebraic Analysis" February 19-23, 2013, Padova
- Workshop "Geometria in Bicocca 2011" May 12-13 2011, Milano.
- "Journées Complexes Lorraines," May 2-6 2011, Institut Élie Cartan, Nancy.
- "Workshop of Hodge theory", ICTP (Trieste), July 2010.
- "Workshop in complex geometry", Korea Institute for Advanced Studies, Seoul, September 2009.
- "Recenti progressi in geometria complessa differenziale e simplettica", Pisa, Istituto E.de Giorgi February 2009.
- "Topology of complex algebraic varieties", Alghero, September 2006.
- "Birational Geometry of Varieties", Pisa, May 2006.
- "Topology and differential geometry ", Pisa Istituto E.de Giorgi, September 2004.

- "Algebraic cycles and motives" a conference in honour of J.Murre, annual EAGER workshop,
Leiden August 2004.
- "Multiplier ideal sheaves in algebraic geometry and complex analysis" Oberwolfach April 2004.

Recent selected talks

- Talk in the seminar on geometric representation theory, organized by B.C. Ngô at the College de France Paris, 28 June 2024,
- Talk in the special day "100 anni di UMI" Bologna 31 Marzo 2022,
- Seminaire Bourbaki 1560: Homfly polynomials from the Hilbert schemes of a planar curve, Paris, 30 March 2019,
- Two talks at the University of Melbourne, December 2018,
- Colloquium speaker at the Université libre de Bruxelles, May 2017,
- Talk at the Algebraic Geometry Seminar University of Brown, April 2015
- Talk at the Algebraic Geometry Seminar IAS Princeton February 2015.
- Two talks at the Geometry seminar University of Mainz, February 2013,
- Talk at the Geometry seminar University of Essen, February 2013,
- Talk at the Geometry seminar Scuola Normale Superiore November 2012,
- Talk at the Geometry seminar Università di Roma, Sapienza, November 2012,
- Talk at the Geometry seminar École Polytechnique Federale Lausanne, September 2012,
- Talk at the Geometry seminar Università di Pavia, May 2012,
- Speaker at "Seminario Fisico Matematico dell'Università di Milano", March 2012,
- Oberseminar Max Planck Institut für Mathematik, Bonn, January 2012.
- Talk in the Algebraic Geometry seminar of University of Zurich, September, 2011.
- Geometry seminar at Istituto Superior Tecnico Lisbon, April, 2011.
- two talks in the Geometry seminar Freiburg University, February 2011.

- talk in the Algebraic Geometry seminar of the Max Planck Institut für Mathematik in Bonn, November 2008.
- talk in the Geometry seminar of the Mathematical Institute, University of Oxford, February 2008.
- talk at “The Geometric Langlands Seminar,” University of Chicago, February 2007.
- talk at ICTP “Abdus Salam,” Trieste, October 2006.
- talk at “Institut Fourier,” Grenoble, May 2005.
- talk at IAS Princeton, February 2005.

Series of lectures in the last ten years

- Course on “Perverse sheaves and support theorems” at the Winter School in Dobbiaco February 2020
- Course on “Perverse sheaves” at the Hausdorff Institut für Mathematik in Bonn February 2020
- Weekly course at the “Matrix” meeting Geometrical and categorical representation theory Matrix Institute (Australia), December 2018.
- Scientific Director of the school “an Introduction to the $P=W$ conjecture” Tatiou (France) July 2018
- Minicourse “*An introduction to the $P=W$ conjecture*”, workshop Hodgefun Groupes Fondamentaux, Thorie de Hodge et Motifs de l’Agence Nationale de la Recherche (2016-2020). Villa Finaly (Florence).
- Minicourse “*Perverse sheaves*” in the school “Riemann Hilbert correspondence”, Padova, January 2018
- Minicourse “*Perverse sheaves and Hodge theory*” in the school “Hodge conjecture, the state of the Art”, Leivico June 2016.
- Five lectures on “*Hodge theory*” for the School “Derived Categories, Weyl Algebras and Hodge Theory” University of Warwick, UK
- “*Hodge theory*”, Course at the Scuola Normale Superiore di Pisa, Fall term 2014.
- Course “*nearby and vanishing cycles*” in the summer school “Monodromy” del progetto ALGANT, a Dobbiaco, 23-27 Giugno 2014.

- Course in the Spring School "Classical and p-adic Hodge theories", presso il Centre H. Lebesgue dell'Université de Rennes, 19-23 Marzo 2014.
- *Mixed Hodge theory* 5 lectures, Bernoulli Center, EPFL Lausanne, Gennaio-febbraio 2014.
- *Perverse sheaves, nearby and vanishing cycles*: 4 lectures at Università di Padova, April 2012.
- *Mixed Hodge theory and nonabelian Hodge theory of curves*, three talks in the series "Fables géométriques", Université de Genève, March 2011.
- *Hitchin fibrations, endoscopy and mirror symmetry*, 4 lectures at the Mathematics Department, University of Roma "Sapienza", December 2010.
- Course "*Hodge theory of maps*", joint with M.A. de Cataldo, at the ICTP (Trieste) Summer school in Hodge Theory, June 2010.
- Unique lecturer of the winter school "*The topology of algebraic maps, Perverse sheaves and the decomposition theorem*", University of Freiburg, 22-29 February 2010.
- *Minicourse on Hodge Theory*: 2 lectures at Université de Genève, April 2009.
- *Topics on Mixed Hodge Theory*: 4 lectures at Università di Padova, June 2007.
- *An introduction to Mixed Hodge Theory*: 4 lectures at the ICTP "Abdus Salam" Trieste, October 2006.
- *Perverse sheaves and Hodge theory*: 4 lectures at Università di Roma "La Sapienza", October-December 2003.

Teaching Activity

- Except for the sabbatical leaves in the spring term 2014-2015 and in the year 2006/2007 I have usually given two courses each year, one for the first level degree ("Laurea triennale") in Mathematics, one for the second level degree ("Laurea specialistica") in Mathematics.
- I have been a member of the "Collegio Superiore" of the University of Bologna, a special program addressed to selected students, from 2002 to 2006 and again from 2009 to present. In particular during these four years I have been tutoring a group of mathematics students (first and second level), for whom I organized special programs of lectures, reading courses and selected exercises sessions.

- I supervised the graduation theses, for the first or second level degree in mathematics (both levels for some of the students), of more than 40 students. The topics treated fall within one of the following fields: geometric group theory, algebraic topology, complex analysis, differential geometry, Lie groups, algebraic geometry. Many of these undergraduate students went on to study mathematics enrolling in Ph.D. programs of other universities.

Services and fundings

- Member of the scientific committee for the UMI Congress 2019.
- Local coordinator PRIN project "Moduli spaces and Lie theory", 2012, 2015, 2017.
- Referee for several mathematical journals, such as *Inventiones Mathematicae*, *Annals of Mathematics*, *Advances in Mathematics*, *Mathematische Annalen*, *Manuscripta Mathematica*, *Mathematische Zeitschrift*, *Annali di Matematica Pura e Applicata*, *Annali della Scuola Normale Superiore di Pisa*, *Mathematical Research Letters*, *Geometry and Topology*, *Journal of Algebraic Geometry*.
- Referee for projects of the NSF.
- Member of the scientific evaluation council of GRIFGA, "Groupement de Recherche européen Italo-Francais en Géométrie Algébrique."
- Member of the committee for the evaluation of Ph.D. theses at the Universities of Milano, Pavia, Roma I, Roma 3, Scuola Normale Superiore di Pisa.

Spoken languages

Italian (first language), English (fluent), French (good), German (elementary level).

Selected Publications

- [1] L. Migliorini, “A smooth family of minimal surfaces of general type over a curve of genus at most one is trivial”, *J. Algebraic Geometry* **4**, 353-361 (1995).
- [2] P. Heinzner, L. Migliorini, M. Polito, “Semistable quotients”, *Ann. Scuola Norm. Sup. Pisa, cl.Sci*(4) **26** no.2, 233-248(1998).
- [3] M.A. de Cataldo, L. Migliorini, “The Chow groups and the motive of the Hilbert schemes of surfaces”, *Journal of Algebra* **251** (2002), 824-848.
- [4] M.A. de Cataldo, L. Migliorini, “The hard Lefschetz theorem and the topology of semismall maps”, *Ann. Scient. Éc. Norm. Su., 4^e série*, t.**35**, 2002, 759-772.
- [5] M.A. de Cataldo, L. Migliorini, “The Hodge theory of algebraic maps”, *Ann. Scient. Éc. Norm. Sup.*(4)**38**,(2005) 693-750.
- [6] M.A. de Cataldo, L. Migliorini, “The decomposition theorem, perverse sheaves and the topology of algebraic maps”, *Bulletin of the Amer.Math.Soc.* **46**,(2009), 535-633.
- [7] M.A. de Cataldo, L. Migliorini, “The perverse filtration and the Lefschetz hyperplane Theorem”, *Annals of Math.* 171 n.3 (2010) 2089-2113.
- [8] M.A. de Cataldo, T. Hausel, L. Migliorini, “The topology of the Hitchin map and the Hodge theory of character varieties ”, *Annals of Math.* 175 n.3 (2012) 1329-1407.
- [9] L. Migliorini, V. Shende, “A support theorem for Hilbert schemes of planar curves”, *Journal of the European Mathematical Society* 15 (2013), 2353–2367.
- [10] M.A. de Cataldo, L. Migliorini, M.Mustata, ”Combinatorics and topology of proper toric maps” *J. Reine Angew. Math.* 744 (2018), 133163.
- [11] L. Migliorini, V. Shende, “Higher discriminants and the topology of algebraic maps,” *Algebr. Geom.* 5 (2018), no. 1, 114–130
- [12] F. Callegaro, E. Delucchi, M. D’Adderio, L. Migliorini, R. Pagaria, “Orlik-Solomon type presentation for the cohomology algebra of toric arrangements,” *Trans. Amer. Math. Soc.* 373 (2020), 1909-1940
- [13] L. Migliorini, V. Shende, F.Viviani “A support theorem for Hilbert schemes of planar curves, II” *Compos. Matem.* 157 (2021), 835–882
- [14] M.A. de Cataldo, J. Heinloth, L. Migliorini, “A support theorem for the Hitchin fibration: the case of GL_n and K_C ” *J. Reine Angew. Math.* 780 (2021), 4177.
- [15] M.Mauri, L. Migliorini, “The Hodge to singular correspondence,” to appear in the *Journal of the European Mathematical Society*