

# Marco Manetti

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## Education

- Ph.D. in Mathematics, *Summa Cum Laude*, Scuola Normale Superiore, 1995 (advisor F. Catanese).
- Master degree in Mathematics, *Summa Cum Laude*, Pisa University, 1989 (advisor F. Catanese).
- Diploma in Mathematics, Scuola Normale Superiore, 1989.

## Employments

- Full Professor, Department of Mathematics, Sapienza University, 2001–present.
- Associate Professor, Department of Mathematics, Sapienza University, 1999–2001.
- Assistant Professor, Scuola Normale Superiore, 1991–1999.
- Graduate Student, Scuola Normale Superiore, 1990–1991.

## Research Interest

Algebraic geometry, deformation theory, derived and differential graded algebraic structures, algebraic homotopy.

## Publications

### *Research Papers*

1. M. Manetti: *Normal degenerations of the complex projective plane*. J. reine angew. Math. **419** (1991) 89-118.
2. M. Manetti: *Normal projective surfaces with  $\rho = 1$ ,  $P_{-1} \geq 5$* . Rend. Sem. Mat. Univ. Padova **89** (1993) 195-205.
3. M. Manetti: *On Some Components of Moduli Space of Surfaces of General Type*. Compositio Mathematica **92** (1994) 285-297.
4. M. Manetti: *On smooth curves passing through rational surface singularities*. Mathematische Zeitschrift **218** (1995) 375-386.
5. M. Manetti: *Iterated double covers and connected components of moduli spaces*. Topology **36** (1996) 745-764.
6. M. Manetti: *Algebraization of analytic curve germs passing through isolated surface singularities*. Arch. Math. (Basel) **66** (1996) 428-440.
7. M. Manetti: *Automorphisms of generic cyclic covers*. Revista Matemática de la Universidad Complutense de Madrid **10** (1997) 149-156.

8. B. Fantechi and M. Manetti: *Obstruction calculus for functors of Artin rings, I*. J. Algebra **202** (1998) 541-576.
9. M. Manetti: *Degenerate double covers of the projective plane*. In: Catanese, Hulek, Peters and Reid eds.: *New trends in algebraic geometry (Warwick, 1996)*. London Math. Soc. Lecture Note Ser., **264**, Cambridge Univ. Press (1999) 255-281.
10. B. Fantechi and M. Manetti: *On the  $T^1$ -lifting theorem*. J. Algebraic Geom. **8** (1999) 31-39.
11. M. Manetti: *On the moduli space of diffeomorphic algebraic surfaces*. Invent. Math. **143** (2001) 29-76.
12. M. Manetti: *Deformation theory via differential graded Lie algebras*. In *Seminari di Geometria Algebrica 1998-1999* Scuola Normale Superiore (1999); [arXiv:math.AG/0507284](#).
13. M. Manetti: *Extended deformation functors*. Int. Math. Res. Not. **14** (2002) 719-756; [arXiv:math.AG/9910071](#).
14. M. Manetti: *Surfaces of Albanese General type and the Severi conjecture*. Math. Nachr. **261-262** (2003) 105-122.
15. M. Manetti: *Cohomological constraint to deformations of compact Kähler manifolds*. Adv. Math. **186** (2004) 125-142; [arXiv:math.AG/0105175](#).
16. M. Manetti: *Lectures on deformations on complex manifolds*. Rend. Mat. Appl. (7) **24** (2004) 1-183; [arXiv:math.AG/0507286](#).
17. M. Manetti: *Lie description of higher obstructions to deforming submanifolds*. Ann. Sc. Norm. Super. Pisa Cl. Sci. **6** (2007) 631-659; [arXiv:math.AG/0507287](#).
18. D. Fiorenza and M. Manetti:  *$L_\infty$  structures on mapping cones*. Algebra Number Theory, **1**, (2007), 301-330; [arXiv:math.QA/0601312](#).
19. M. Manetti: *Smoothings of singularities and deformation types of surfaces*. In *Symplectic 4-Manifolds and Algebraic Surfaces*, Springer lecture notes in Mathematics **1938** (2008) 196-230.
20. M. Manetti: *Differential graded Lie algebras and formal deformation theory*. In *Algebraic Geometry: Seattle 2005*. Proc. Sympos. Pure Math. **80** (2009) 785-810.
21. D. Fiorenza and M. Manetti: *A period map for generalized deformations*. J. Noncommut. Geom. **3** (2009) 579-597; [arXiv:0808.0140 \[math.AG\]](#).
22. M. Manetti: *A relative version of the ordinary perturbation lemma*. Rend. Mat. Appl. (7) **30** (2010) 221-238; [arXiv:1002.0683 \[math.KT\]](#).
23. D. Iacono and M. Manetti: *An algebraic proof of Bogomolov-Tian-Todorov theorem*. In *Deformation Spaces*. vol. **39**, Vieweg Verlag (2010), 113-133; [arXiv:0902.0732 \[math.AG\]](#).
24. M. Manetti: *On some examples of obstructed irregular surfaces*. Sci. China Math. **54** (2011), no. 8, 1713-1724.
25. D. Fiorenza, M. Manetti and E. Martinengo: *Cosimplicial DGLAs in deformation theory*. Communications in Algebra, **40**, (2012), 2243-2260; [arXiv:0803.0399 \[math.QA\]](#).
26. D. Fiorenza and M. Manetti: *Formality of Koszul brackets and deformations of holomorphic Poisson manifolds*. Homology, Homotopy and Applications, **14**, No. 2, (2012), 63-75; [arXiv:1109.4309v3 \[math.QA\]](#).

27. D. Iacono and M. Manetti: *Posetted trees and Baker-Campbell-Hausdorff product*. *Mediterr. J. Math.* **10** (2013), 611-623; [arXiv:1106.4685 \[math.CO\]](#).
28. D. Iacono and M. Manetti: *Semiregularity and obstructions of complete intersections*. *Advances in Mathematics* **235** (2013) 92-125; [arXiv:1112.0425 \[math.AG\]](#).
29. Manetti, M.: *Kodaira-Spencer formality of products of complex manifolds*. *Trends in Contemporary Mathematics*, Springer INdAM Series **8** (2014) 85-95.
30. Bandiera, R., Manetti, M.: *On coisotropic deformations of holomorphic submanifolds*. *J. Math. Sci. Univ. Tokyo* **22** (2015) 1-37; [arXiv:1301.6000 \[math.AG\]](#).
31. Manetti, M.: *On some formality criteria for DG-Lie algebras*. *J. Algebra* **438** (2015), 90 - 118; [arXiv:1310.3048v2 \[math.QA\]](#).
32. Manetti, M., Ricciardi, G.: *Universal Lie formulas for higher antibrackets*. *SIGMA* **12** (2016), 053, 20 pages. [arXiv:1509.09032 \[math.QA\]](#).
33. Manetti, M.: *Uniqueness and intrinsic properties of non commutative Koszul brackets*. *J. Homotopy Relat. Struct.* **12** (2017), 487-509; [arXiv:1512.05480 \[math.QA\]](#).
34. Bandiera, R., Manetti, M.: *Algebraic models of local period maps and Yukawa algebras*. *Lett Math Phys* **108** (2018) 2055-2097; [arXiv:1506.05753 \[math.AG\]](#).
35. Iacono, D., Manetti, M.: *On deformations of pairs (manifold, coherent sheaf)*. *Canad. J. Math.* **71**, 1209-1241 (2019); <https://doi.org/10.4153/CJM-2018-027-8>, [arXiv:1707.06612](#).
36. Iacono, D., Manetti, M.: *On the adjoint map of homotopy abelian DG-lie algebras*. *Archivum Mathematicum (Brno) Tomus 55* (2019), 7-15; <https://doi.org/10.5817/AM2019-1-7>.
37. Manetti, M., F. Meazzini, F.: *Formal deformation theory in left-proper model categories*. *New York J. Math.* Volume **25** (2019), 1259-1311; [arXiv:1802.06707](#).
38. Manetti, M., Meazzini, F.: *Deformations of algebraic schemes via Reedy-Palamodov cofibrant resolutions*. *Indagationes Mathematicae* **31**(2020) 7-32; <https://doi.org/10.1016/j.indag.2019.08.007>; [arXiv:1810.08570](#)
39. Carocci, F., Manetti, M.: *Endomorphisms of Koszul complexes: formality and application to deformation theory*. *Rend. Circ. Mat. Palermo, Series 2* (2020) 69: 175-193. <https://doi.org/10.1007/s12215-018-00394-w>; [arXiv:1802.07203](#).
40. Fiorenza, D., Manetti, M.: *Formal Abel-Jacobi maps*. *Int. Math. Res. Not.* Vol. 2020, No. 4, pp. 1035-1090. <https://doi.org/10.1093/imrn/rny041>; [arXiv:1610.08684](#).
41. Lepri, E., Manetti, M.: *On deformations of diagrams of commutative algebras*. In: E. Colombo et al. (eds.), *Birational Geometry and Moduli Spaces*, Springer INdAM Series **39** (2020), 77-107. [arXiv:1902.10436](#).
42. Bandiera, R., Manetti, M., Meazzini, F.: *Formality conjecture for minimal surfaces of Kodaira dimension 0*. *Compositio Math.* **157**, 215-235 (2021); [arXiv:1907.10690](#).
43. Lepri, E., Manetti, M.: *Connections and  $L_\infty$  liftings of semiregularity maps*. *Journal of Geometry and Physics* **168** (2021) 104303; [arXiv:2102.05016](#).
44. Iacono, D., Manetti, M.: *Homotopy abelianity of the DG-Lie algebra controlling deformations of pairs (variety with trivial canonical bundle, line bundle)*. *International Journal of Mathematics* Vol. **32**, No. 11 (2021) 2150086, [arXiv:1902.10386](#).

*Accepted papers*

1. Bandiera, R., Manetti, M., Meazzini, F.: Deformations of polystable sheaves on surfaces: quadraticity implies formality. *Moscow Mathematical Journal* (forthcoming), [arXiv:1902.06486](#).

*Recent Preprints (not necessarily intended for publication)*

1. R. Bandiera, E. Lepri, M. Manetti:  $L_\infty$  liftings of semiregularity maps via Chern-Simons classes. [arXiv:2111.12985](#).
2. M. Manetti and C. Spagnoli: *The projective model structure on contractions*. [arXiv:1703.03231](#).

*Other Publications*

M. Manetti: *Nullstellensatz per tutti*. Ricordando Franco Conti, *Pubbl. Cent. Ric. Mat. Ennio Giorgi, Scuola Norm. Sup., Pisa* (2004) 235-244.

M. Manetti: *A proof of a version of a theorem of Hartogs*. *American Mathematical Monthly*, Volume 117, Number 6, June-July 2010, pp. 550-552.

M. Manetti: *Degenerations of Algebraic Surfaces and applications to Moduli problems*. Tesi di Perfezionamento Scuola Normale Superiore (1996).

M. Manetti: *Corso introduttivo alla Geometria Algebrica*. Appunti dei corsi tenuti dai docenti della Scuola Normale Superiore (1998) 1-247.

M. Manetti: *Topologia*. Springer Unitext (2008, 2nd edition 2014).

M. Manetti: *Topology*. Springer Unitext (2015).

## Selected invited talks

“Algebraic Geometry”, L’Aquila, May 1992.

“Symplectic Geometry”, Isaac Newton Institute, Cambridge UK, December 1994.

“Symposium on Algebraic Geometry” Warwick, July 1996.

“Trends in Algebraic Geometry, applications and relations with Physics” Levico Terme (Trento), September 1996.

“AGE workshop on algebraic surfaces” Lisbon, September 1997.

“Europroj annual conference 1998” Toledo, September 1998.

“Mirror Symmetry” Kaiserslautern, June 2001.

“Algebraic Varieties: A conference in memory of Fabio Bardelli”, Florence, May 22-25, 2002

CIME course “Symplectic 4-Manifolds And Algebraic Surfaces” Cetraro, Italy, September 2003.

“2005 AMS Summer Institute on Algebraic Geometry” Seattle, July 2005.

Giornata INdAM. Milan, June 2006.

Workshop on Algebraic Geometry and its Applications. Sogang University, Seoul, January 2007.

Algebraic and Geometric Deformation Spaces - Max-Planck Institute, Bonn, August 11-15, 2008.

The Legacy of Deformation Quantization - Ascona, Switzerland, June 26-July 1, 2011.

Geometry and Physics 2012 - Anogia, Greece, August 6-10, 2012.  
 Higher algebras and Lie-infinity homotopy theory - Luxembourg, June 25-28, 2013.  
 Higher structures in algebraic analysis, Padua, February 10-21, 2014.  
 Geometry and Physics 2015 - Pohang, South Korea, July 6-10, 2015.  
 Noncommutative Geometry and Higher Structures - Roma, 31 Aug - 04 Sep 2015.  
 Noncommutative Geometry and Higher Structures - Perugia, July 25-29, 2016.  
 Geometry and Physics 2017 - State College, Pennsylvania, USA, July 31- August 5, 2017.  
 Birational Geometry and Moduli spaces - Roma INdAM, June 2018.

## Visiting

Oxford University, January-March 2004.  
 Mittag-Leffler program “Moduli spaces”, February-March 2007.  
 Scuola Normale Superiore, January-February 2012.  
 Max-Planck Institute, May 2012.

## Teaching

### *Sapienza University, Mathematics*

Algebraic geometry: 2001-02, 2003-04, 2007-08, 2010-11, 2012-13, 2015-16, 2020-21.  
 Topology: 2004-06, 2009-10, 2013-14, 2016-18.  
 Differential geometry: 2008-09, 2021-22.  
 Linear algebra and geometry: 2003-04, 2006-08, 2010-11, 2017-18.  
 Commutative and homological algebra: 2016-17.  
 Algebra and geometry for the applications: 2018-22.  
 Higher geometry: 2019-20  
 Ph.D. program (various topics): 2001, 2005, 2011, 2013, 2015, 2016.

### *Sapienza University, Natural Sciences*

Calculus and linear algebra: 1999-03, 2004-07, 2012-13, 2014-16, 2018-19.

### *Scuola Matematica Interuniversitaria*

Algebraic geometry: Perugia 2002.

### *Scuola Normale Superiore*

Algebraic topology: 1994-95.  
 Algebraic geometry: 1995-98.

## Advising

*Ph.D. Students:* Donatella Iacono (2006), Elena Martinengo (2009), Ruggero Bandiera (2015), Francesco Meazzini (2018), Luca Simi (2019), Emma Lepri (expected 2023).

*Master Students:* Fabio Marchetti, Fabiana Armentano, Sara Pirozzi, Carmelo Di Natale, Giovanni Gay, Francesca Carocci, Francesco Meazzini, Luigi Lunardon, Chiara Spagnoli, Federico Barbacovi, Michele Pernice, Emma Lepri, Alessio Bottini, Alessandro Lehmann.

## Professional Activities

Editor in chief of *Rendiconti di Matematica e delle sue applicazioni*, 2016–Present.

Associate editor of *Annali di Matematica Pura ed Applicata*, 2012–Present.

Member of the Scientific board of Fondazione C.I.M.E., 2004–2008.

Director of undergraduate studies in Mathematics, Sapienza University, 2008–2009.

Referee for various journals, including: *Inventiones*, *Advances in Mathematics*, *Journal of Algebraic Geometry*, *Journal of Algebra*, *Algebra and Number theory*.

Organizer:

1. (with C. Ciliberto) workshop “Recent developments in the theory of Algebraic Surfaces” Furore (Italy), September 1999.
2. (with L. Caporaso and A. Lopez) workshop “Perspectives in Classification and Moduli Theory” Cortona (Italy), October 2002.
3. (with K. Behrend and B. Fantechi) CIME course “Enumerative invariants in algebraic geometry and string theory”. Cetraro (Italy), June 2005.
4. (with B. Fantechi and D. Iacono) “Workshop in deformation theory, II” Roma, September 2010.
5. (with F. D’Andrea and D. Fiorenza) “Noncommutative Geometry and Higher Structures” Roma, September 2015.
6. (with F. Bastianelli and D. Iacono) “Workshop in deformation theory, III” Bari, February 2018.
7. (with F. Meazzini and C. Onorati) “Moduli spaces and hyper-Kähler varieties in Rome”, Roma, September 2021.

## Honors, Awards, & Fellowships

Premio Bartolozzi, Unione Matematica Italiana, 1999.

Borsa Francesco Severi, 1994.

Premio G.B. Riemann per tesi di laurea, 1992.