List of Publications

Matilde Marcolli

1 Refereed Publications

1.1 Books authored

1. *Feynman Motives*, World Scientific, 2010.

2. *Noncommutative Geometry, Quantum Fields and Motives*, (with Alain Connes) Colloquium Publications, Vol.55, American Mathematical Society, 2008.

3. *Arithmetic noncommutative geometry*, University Lectures Series, Vol.36, American Mathematical Society, 2005.

4. *Seiberg–Witten gauge theory*, Texts and Readings in Mathematics, Vol.17, Hindustan Book Agency, New Delhi, 1999, viii+228 pp.

1.2 Articles published in refereed journals

1. *Noncommutative motives, numerical equivalence, and semi-simplicity* (with Goncalo Tabuada) to appear in American J. Math.

2. *Kontsevich's noncommutative numerical motives* (with Goncalo Tabuada) to appear in Compositio Math.

3. *Coupling of gravity to matter, spectral action and cosmic topology* (with Branimir Cacic and Kevin Teh) to appear in Journal of Noncommutative Geometry

4. *Thermodynamic Semirings* (with Ryan Thorngren) to appear in Journal of Noncommutative Geometry

5. *A motivic approach to phase transitions in Potts models* (with Paolo Aluffi) to appear in Journal of Geometry and Physics

6. *Arithmetic of Potts model hypersurfaces* (with Jessica Su) to appear in International Journal of Geometric Methods in Modern Physics

7. *Noncommutative Mixmaster cosmologies* (with Christopher Estrada) to appear in International Journal of Geometric Methods in Modern Physics

8. *Codes as fractals and noncommutative spaces* (with Christopher Perez) to appear in Mathematics in Computer Science

9. *The Ricci flow on noncommutative two-tori* (with Tanvir Ahamed Bhuyain) Letters in Mathematical Physics, Vol.101 (2012) N.2, 173-194.

10. *Feynman integrals and motives of configuration spaces* (with Ozgur Ceyhan) Communications in Mathematical Physics: Vol.313, N.1 (2012), Page 35-70

11. *The coupling of topology and inflation in noncommutative cosmology* (with Elena Pierpaoli and Kevin Teh) Communications in Mathematical Physics, Vol.309 (2012) N.2, 341-369

12. *The spectral action and cosmic topology* (with Elena Pierpaoli and Kevin Teh) Communications in Mathematical Physics, 304 (2011) 125-174.

13. *Early Universe models from Noncommutative Geometry* (with Elena Pierpaoli) Advances in Theoretical and Mathematical Physics, Vol.14 (2010) 1373-1432.

14. *Graph hypersurfaces and a dichotomy in the Grothendieck ring* (with Paolo Aluffi) Letters in Mathematical Physics, (2011) Vol.95, 223-232.

15. *Algebro-geometric Feynman rules* (with Paolo Aluffi), International Journal of Geometric Methods in Modern Physics, Vol.8 (2011) N.1, 203-237.

16. *Building cosmological models via noncommutative geometry*, International Journal of Geometric Methods in Modern Physics, Vol.8, N.5 (2011) 1131-1168.

17. *Spin foams and noncommutative geometry* (with Domenic Denicola and Ahmad Zainy al-Yasry) Class. Quantum Grav. 27 (2010) 205025 (53pp)

18. *Boundary conditions of the RGE flow in the noncommutative geometry approach to particle physics and cosmology* (with Daniel Kolodrubetz) Physics Letters B 693 (2010) 166-174.

19. *Open string theory and planar algebras* (with Ozgur Ceyhan) J. Phys. A: Math. Theor. 43 (2010) 385401 (12pp)

20. *Error-correcting codes and phase transitions* (with Yuri Manin) Mathematics in Computer Science, Vol.5 (2011) 133-170.

21. *Parametric Feynman integrals and determinant hypersurfaces* (with Paolo Aluffi) Advances in Theoretical and Mathematical Physics, Vol.14 (2010) 911-963.

22. *Cuntz-Krieger algebras and wavelets on fractals* (with Anna Maria Paolucci) Complex Analysis and Operator Theory, Vol.5 (2011) N.1, 41-81.

23. *Cyclotomy and endomotives*, p-Adic Numbers, Ultrametric Analysis and Applications, Vol.1 (2009) N.3, 217-263.

24. *Feynman motives of banana graphs* (with Paolo Aluffi) Communications in Number Theory and Physics, Vol.3 (2009) N.1, 1-57.

25. *Fun with F_1* (with Alain Connes and Caterina Consani), Journal of Number Theory, Vol.129 (2009), N.6, 1532-1561.

26. *Solvmanifolds and noncommutative tori with real multiplication.* Communications in Number Theory and Physics, Vol.2 (2008) No.2, 423–479.

27. *Supermanifolds from Feynman graphs*, (with Abhijnan Rej) Journal of Physics A, Vol.41 (2008) 315402 (21pp).

28. *Coverings, correspondences, and noncommutative geometry* (with Ahmed Zainy al-Yasry) Journal of Geometry and Physics, Vol.58 (2008) N.12, 1639-1661

29. *Noncommutative geometry and motives: the thermodynamics of endomotives*, (with Alain Connes and Caterina Consani), Advances in Mathematics, Vol.214 (2007) N.2, 761–831.

30. *Gravity and the Standard Model with neutrino mixing* (with Ali Chamseddine and Alain Connes), Advances in Theoretical and Mathematical Physics, 11 (2007) 991–1090.

31. *Quantum statistical mechanics over function fields* (with Caterina Consani) Journal of Number Theory, 123 (2007) 487–528.

32. *KMS states and complex multiplication*, (with Alain Connes and Niranjan Ramachandran) Selecta Math. (N.S.) Vol.11 (2005) N.3-4, 325–347.

33. *Zeta functions that hear the shape of a Riemann surface* (with Gunther Cornelissen) Journal of Geometry and Physics, Vol.58 (2008) N.5, 619-632.

34. *On the K-theory of graph C^* algebras* (with Gunther Cornelissen and Oliver Lorscheid) Acta Applicandae Mathematicae, Vol.102 (2008) N.1, 57–69.

35. *Quantum Fields and motives* (with Alain Connes), Journal of Geometry and Physics, Vol. 56 (2006) N.1, 55–85.

36. *Q-lattices: quantum statistical mechanics and Galois theory* (with Alain Connes), Journal of Geometry and Physics, Vol. 56 (2006) N.1, 2–23.

37. *Renormalization and motivic Galois theory* (with Alain Connes), International Math. Research Notices (2004) N.76, 4073–4092.

38. *Noncommutative geometry, dynamics, and ∞-adic Arakelov geometry*, (with Caterina Consani), Selecta Mathematica, Vol.10 (2004) N.2, 167–251.

39. *Spectral triples from Mumford curves*, (with Caterina Consani), International Math. Research Notices, 36 (2003) 1945–1972.

40. *Limiting Modular symbols and the Lyapunov spectrum*, Journal of Number Theory, Vol.98 N.2 (2003) 348-376.

41. *The geometric triangle for 3-dimensional Seiberg-Witten monopoles*, (with Alan Carey and Bai-Ling Wang), Communications in Contemporary Mathematics, Vol.5 N.2 (2003) 197–250.

42. *Triplets spectraux en geometrie d'Arakelov*, (with Caterina Consani), Comptes Rendus Acad. Sci. Paris, Ser. I 335 (2002) 779–784.

43. *Weak UCP and perturbed monopole equations*, (with Bernhelm Booss-Bavnbek and Bai-Ling Wang), International Journal of Mathematics, Vol. 13 N.9 (2002) 987–1008.

44. *Continued fractions, modular symbols, and noncommutative geometry*, (with Yuri Manin) Selecta Mathematica, New Ser. Vol.8 N.3 (2002) 475–520.

    (This paper got a Featured Review on the Mathematical Reviews: MR1931172)

45. *Holography principle and arithmetic of algebraic curves*, (with Yuri Manin), Advances in Theoretical and Mathematical Physics, Vol.5, N.3 (2001) 617–650.

46. *Seiberg-Witten and Casson-Walker invariant for rational homology spheres*, (with Bai-Ling Wang) Geometriae Dedicata, Vol.91 (2002), 45–58.

47. *Equivariant Seiberg–Witten Floer homology*, (with Bai-Ling Wang), Communications in Analysis and Geometry, Vol.9 N.3 (2001) 451–639.

    (This paper got a Featured Review on the Mathematical Reviews: MR1895135)

48. *Twisted index theory on good orbifolds II: Fractional quantum numbers*, (with Varghese Mathai), Communications in Mathematical Physics, Vol.217 (2001) N.1 55–87.

49. *Twisted index theory on good orbifolds I: Noncommutative Bloch theory*, (with Varghese Mathai), Communications in Contemporary Mathematics, Vol.1 (1999) N.4, 553–587.

50. *Gauge groups and characteristic classes*, (with Mauro Spreafico), Expositiones Mathematicae, Vol.15 (1997) N.3, 229–249.

51. *Seiberg–Witten Floer homology and Heegaard splittings*, International Journal of Mathematics, 7 (1996) N.5, 671–696.

52. *Some remarks on conjugacy classes of bundle gauge groups*, Cahiers Topologie Géom. Différentielle Catég. 37 (1996) N.1, 21–39.

53. *Lorentz bundles*, Rend. Inst. Mat. Univ. Trieste 25 (1993) N.1-2, 309–315.

1.3   Refereed Book Chapters and Volume Contributions

1. *Feynman motives and deletion-contraction relations* (with Paolo Aluffi) in "Topology of Algebraic Varieties and Singularities", Contemporary Mathematics, Vol.538 (2011) 21-64.

2. *Noncommutative geometry and arithmetic* (ICM talk) Proceedings of the ICM-2010, Hyderabad, Vol.III, 2057-2077, World Scientific/Hindustan Book Agency, 2010.

3. *Modular index invariants of Mumford curves* (with Alan Carey and Adam Rennie) in "Noncommutative Geometry, Arithmetic, and Related Topics", Johns Hopkins University Press, 2011, pp.31-74.

4. *Motivic ideas in noncommutative geometry* (an appendix to Introduction to Motives, by R.Sujatha and J.Plazas) in "Noncommutative Geometry and Physics: Renormalisation, Motives, Index Theory", European Mathematical Society, 2011, pp.61–87.

5. *Motivic renormalization and singularities*, in "Quanta of Maths", Clay Mathematics Institute, Vol.11 (2010) 409-458.

6. *Feynman integrals and motives*, in "European Congress of Mathematics, Amsterdam 14-18 July 2008", pp.293–332, European Mathematical Society, 2010.

7. *The Weil proof and the geometry of the adele class space*, (with Alain Connes and Katia Consani) in "Algebra, Arithmetic, and Geometry: in honor of Yu.I.Manin" Progress in Mathematics, Vol.270, Part I, Birkhauser 2009, 339-406.

8. *Motivic ideas in physics* (an appendix to "Motives: an introductory survey for physicists" by Abhijnan Rej) in "Combinatorics and Physics", Contemporary Mathematics, Vol.539 (2011), pp.407–415

9. *Modular shadows and the Levy-Mellin infinity-adic transform* (with Yuri Manin) in "Modular forms on Schiermonnikoog" (Eds. B.Edixhoven, G. van der Geer, B.Moonen) Cambridge University Press, 2008, pp. 189-238.

10. *A walk in the noncommutative garden* (with Alain Connes) in "An invitation to Noncommutative Geometry", pp.1-128, World Scientific, 2008.

11. *From Physics to Number Theory via Noncommutative Geometry. Part II: Renormalization, the Riemann–Hilbert correspondence, and motivic Galois theory* (with Alain Connes), in "Frontiers in Number Theory Physics and Geometry, II", pp.617–713, Springer Verlag, 2006.

12. *Modular curves, C^*-algebras, and chaotic cosmology*, in "Frontiers in Number Theory Physics and Geometry, II" pp.361–372, Springer Verlag, 2006.

13. *A walk in the noncommutative garden* (with Alain Connes) in "An invitation to noncommutative geometry" World Scientific, 2007.

14. *KMS states and complex multiplication (part II)*, (with Alain Connes and Niranjan Ramachandran) in "Operator Algebras", pp.15–60, Springer Verlag, 2006.

15. *Noncommutative geometry on trees and buildings* (with Gunther Cornelissen, Kamran Reihani and Alina Vdovina), in "Traces in Geometry, Number Theory and Quantum Fields", pp. 73-98, Vieweg Verlag, 2007.

16. *Archimedean cohomology revisited*, (with Caterina Consani), in "Noncommutative Geometry and Number Theory", pp.109–140. Vieweg Verlag, 2006.

17. *Towards the fractional quantum Hall effect: a noncommutative geometry perspective* (with Varghese Mathai) in "Noncommutative Geometry and Number Theory", pp.235–262. Vieweg Verlag, 2006.

18. *From Physics to Number Theory via Noncommutative Geometry. Part I: Quantum Statistical Mechanics of Q-lattices*, (with Alain Connes) in "Frontiers in Number Theory Physics and Geometry, I", pp.269–350, Springer Verlag, 2006.

19. *Variants of equivariant Seiberg-Witten Floer homology*, (with Bai-Ling Wang), in "Spectral Geometry of Manifolds with Boundary and Decomposition of Manifolds", Contemporary Mathematics, Vol. 366 (2005) 225–238.

20. *New perspectives in Arakelov geometry*, (with Caterina Consani), in "Number Theory", CRM Lecture Notes, Vol. 36 (2004) 81–102.

2 Preprints

2.1 Submitted for peer reviewed publications

1. *Graph Reconstruction and Quantum Statistical Mechanics* (with Gunther Cornelissen), arXiv:1209.5783

2. *Quantum field theory over F_1* (with Dori Bejleri), arXiv:1209.4837

3. *Asymptotic safety, hypergeometric functions, and the Higgs mass in spectral action models* (with Christopher Estrada), arXiv:1208.5023

4. *Feynman integrals and periods in configuration spaces* (with Ozgur Ceyhan), arXiv:1207.3544

5. *Noncommutative Artin motives* (with Goncalo Tabuada), arXiv:1205.1732

6. *Kolmogorov complexity and the asymptotic bound for error-correcting codes* (with Yuri Manin), arXiv:1203.0653

7. *From exceptional collections to motivic decompositions via noncommutative motives* (with Goncalo Tabuada), arXiv:1202.6297

8. *Unconditional motivic Galois groups and Voevodsky's nilpotence conjecture in the noncommutative world* (with Goncalo Tabuada), arXiv:1112.5422

9. *Noncommutative numerical motives, Tannakian categories, and motivic Galois groups* (with Goncalo Tabuada), arXiv:1110.2438

10. *Quantum Statistical Mechanics, L-series and Anabelian Geometry* (with Gunther Cornelissen), arXiv:1009.0736

11. *Dynamical systems on spectral metric spaces* (with Jean Bellissard and Kamran Reihani), arXiv:1008.4617

3 Other publications

3.1 Books edited

1. *Frobenius manifolds, quantum cohomology and singularities*, (with Claus Hertling, Editors), Vieweg Verlag, 2004.

2. *Noncommutative Geometry and Number Theory*, (with Caterina Consani, Editors), Vieweg Verlag 2006.

3. *Traces in Geometry, Number Theory and Quantum Fields*, (with Sergio Albeverio, Sylvie Paycha, Jorge Plazas), Vieweg Verlag 2007.

4. *An invitation to Noncommutative Geometry*, (with Masoud Khalkhali), World Scientific, 2008.

5. *Arithmetic and Geometry around Quantization*, (with Özgür Ceyhan and Yuri Manin), Birkhäuser (to appear in 2009).

6. *Deformation Spaces*, (with Hossein Abbaspour and Thomas Tradler), Vieweg Verlag (to appear in 2010).

7. *Quantum groups and noncommutative geometry*, (with Deepak Parashar) Vieweg Verlag (to appear in 2010).

8. *Combinatorics and Physics*, (with Kurusch Ebrahimi-Fard and Walter van Suijlekom) Contemporary Mathematics, Vol.539, American Mathematical Society, 2011.

3.2 Popularization and non-refereed publications

1. *Noncommutative geometry and number theory*, in Nieuw Archief voor Wiskunde, (5) 9 (2008), no. 2, 109–112.

2. *Number theory in physics*, invited contribution to the "Encyclopaedia of Mathematical Physics" Elsevier.

3. *Mathematics as culture and knowledge*, in "Les Dechiffreurs", Belin 2008.

4   Unpublished manuscripts

1. *Anomalies, Dimensional Regularization, and Noncommutative Geometry* (with Alain Connes), unfinished, available from my website.

2. *Exact triangles in Seiberg-Witten-Floer theory, Part II: geometric limits of flow lines*, (with Bai-Ling Wang)

   arXiv:math.DG/9907080 71 pages

3. *Exact triangles in Seiberg-Witten-Floer theory, Part III: the proof of exactness*, (with Bai-Ling Wang)

   arXiv:math.DG/0009157. 69 pages

4. *Exact triangles in Seiberg–Witten Floer theory. Part IV: Z-graded monopole homology*, (with Bai-Ling Wang)

   arXiv:math.DG/0009159. 34 pages

5. Система Обыкновенниих Дифференциальних Уравнений Антисамодвойственних Связностей и Монополей Дирака,

   MPI preprints 2002-40. 7 pages