

Mikhail Lyubich

May 7, 2021

References

Papers published in (or accepted to) refereed journals

- [1] On the logarithmic property of the degree of a finite group. Dokl. Akad. Nauk SSSR, v. 247 (1979), # 4, 791-794.
- [2] Entropy of analytic endomorphisms of the Riemann sphere. Funct. Anal. & Appl., v. 15 (1981), # 4, 83-84.
- [3] On the logarithmic property of the degree of a finite group. Publ. Math. Debrecen, v. 29 (1982), 73 - 78.
- [4] Typical behaviour of trajectories of a rational mapping of the sphere. Dokl. Akad. Nauk SSSR, v. 268 (1982), 29 - 32.
- [5] The measure of maximal entropy of a rational endomorphism of the Riemann sphere. Funct. Anal. and Appl., v. 16 (1982), 78 - 79.
- [6] Entropy properties of rational endomorphisms of the Riemann sphere. Erg. Th. & Dyn. Syst., v. 3 (1983), # 3, 351-385.
- [7] Some typical properties of the dynamics of rational maps, Russian Math. Surveys, v. 38 (1983), # 5, 154-155.
- [8] Almost periodicity, the Ruelle operator, and Banach shifts. Matem. Analys and Geometria, Tashkent, 1983, 47 - 51.
- [9] An analysis of stability of the dynamics of rational functions. Teoriya Funk., Funk. Anal. & Prilozh., # 42 (1984), 72 - 91 (Russian). English translation: Selecta Mathematica Sovietica, v. 9 (1990), 69 - 90.
- [10] (with A. Eremenko) Iterations of entire functions. Dokl. Akad. Nauk SSSR, v. 279 (1984), # 1, 25-27.
- [11] (with Yu. Lyubich). The spectral theory of almost periodic representations of semigroups. Teor. Funk., Funk. Anal. & Prilozh., Ukrainian Math. J., v. 36 (1984), 632 - 636.

- [12] (with Yu. Lyubich). A general form of nonnegative projections in the space of continuous functions on a compact space. *Teor. Funk., Funk. Anal. & Prilozh.*, # 43 (1985), 87 - 93.
- [13] (with Yuri Lyubich) The Perron-Frobenius theory for almost periodic operators and representations of semigroups. *Teor. Funk., Funk. Anal. & Prilozh.*, # 45 (1986), 54-72.
- [14] Some properties of unstable rational mappings of a sphere. In: "Methods of the Qualitative Theory of Diff. equations", 70 - 86. Gorkii State Univ., 1983.
- [15] Dynamics of rational transforms: topological picture. *Russian Math. Surveys*, v. 41, # 4 (1986), 43-117.
- [16] (with A.E. Eremenko) Structural stability in certain families of entire functions. *Function. Analysis and Appl.*, v. 19 (1985), 86 - 87.
- [17] On typical behaviour of trajectories of the exponential function. *Uspech Mat. Nauk*, v. 41 (1986), 199 - 200.
- [18] (with Yu. Lyubich) Splitting off the boundary spectrum for almost periodic operators and representations of semigroups. *Teor. Funk., Funk. Anal. & Prilozh.*, # 46 (1986), 69 - 84.
- [19] (with Yu. Lyubich) The Perron-Frobenius theory for almost periodic operators and representations of semigroups. *Teor. Funk., Funk. Anal. & Prilozh.*, # 46 (1986), 54 - 72.
- [20] Measurable dynamics of the exponential. *Dokl. Akad. Nauk SSSR*, v. 292 (1987), # 6, 1301-1304. *Teor. Funk., Funk. Anal. & Prilozh.*, # 46 (1986), 54 - 72.
- [21] (with V. Suvorov) Free subgroups of $SL_2(\mathbf{C})$ with two parabolic generators. *Zapiski Nauchnykh Seminarov LOMI*, v. 155 (1986), 150 - 155.
- [22] Measurable dynamics of the exponential. *Syberian J. of Math.*, v. 28 (1987), 111 - 127.
- [23] (with Alex Eremenko) Examples of entire functions with pathological dynamics. *J. London Math. Soc.*, v. 36 (1987), 458 - 468.
- [24] (with Alexander Blokh) Attractors of transformations of the interval. *Function. Analysis and Appl.*, v. 21 (1987), 70 - 71.
- [25] (with A. Blokh) Attractors of maps of the interval. *Banach Center Publ.*, v. 23 (1989), 427 - 442.
- [26] (with A. Blokh) The absence of wandering intervals in one-dimensional smooth dynamical systems. *Dokl. Akad. Nauk SSSR*, v. 304 (1989), 1033-1036.

- [27] Non-existence of wandering intervals and structure of topological attractors of one-dimensional dynamical systems, I. The case of negative Schwarzian derivative. *Erg. Th. & Dyn. Syst.*, v. 9 (1989), # 4, 737-750.
- [28] Non-existence of wandering intervals and structure of topological attractors of one-dimensional dynamical systems, II. The smooth case. *Erg. Th. & Dyn. Syst.*, v. 9 (1989), # 4, 751 - 758.
- [29] (with A. Eremenko) Dynamics of analytic transformations. *Algebra & Analysis*. v. 1 (1989), # 3, 1-70.
- [30] (with A. Blokh) Ergodicity of transitive unimodal transformations of the interval. *Ukrainian Math. J.*, v. 41 (1989), 985 - 988
- [31] (with A. Blokh) On the decomposition of one-dimensional dynamical systems into ergodic components. *Algebra and Analysis*, v.1 (1989), 128 - 145. English translation: *Leningrad Math. J.*, v. 1 (1989), 137 - 155.
- [32] (with A. Blokh) Measure of solenoidal attractors of unimodal transformations of the interval. *Math. Notes.*, v. 48 (1990), 15 - 20.
- [33] (with A. Blokh) Measure and dimension of solenoidal attractors of one-dimensional dynamical systems. *Comm. Math. Phys.*, v. 127 (1990), 573-583. English translation: *Leningrad Math. J.*, v. 1 (1990), 563 - 634.
- [34] (with A. Blokh) Measurable dynamics of S -unimodal maps of the interval. *Ann. Sci. Ec. Norm Sup.*, v. 24 (1991), 545-573.
- [35] (with Pavel Bleher) The Julia sets and complex singularities in hierarchical Ising models. *Comm. Math. Phys.*, v. 141 (1991), 453-474.
- [36] (with A. Eremenko) Dynamical properties of some classes of entire functions. *Ann. Inst. Fourier*, v. 42 (1992), # 4, 989-1020.
- [37] (with John Milnor) The Fibonacci unimodal map. *Journal of AMS*, v. 6 (1993), # 2, 425-457.
- [38] (with Alexander Volberg) A comparison of harmonic and balanced measure on Cantor repellers. In: "Approximation of solutions of PDE", NATO ASI series, v. 365 (1992), 127-140.
- [39] (with E. Bedford & J. Smillie) Polynomial diffeomorphisms of \mathbf{C}^2 , IV: The measure of maximal entropy and laminar currents. *Inventiones Math.*, v. 112 (1993), 77-125.
- [40] (with E. Bedford & J. Smillie) Distribution of periodic points of polynomial diffeomorphisms of \mathbf{C}^2 . *Inventiones Math.* (1994).

- [41] Combinatorics, geometry and attractors of quasi-quadratic maps. *Annals of Math.*, v. 140 (1994), 347-404.
- [42] (with Y. Minsky) Laminations in holomorphic dynamics. *J. Diff. Geometry.*, v. 47 (1997), 17 -94.
- [43] Dynamics of quadratic polynomials, I-II. *Acta Math.*, v. 178 (1997), 185-297.
- [44] Dynamics of quadratic polynomials, III. Parapuzzle and SBR measures. *Asterisque*, v. 261 (2000). Colloque en l'honneur d'Adrien Douady.
- [45] (with M. Yampolsky) Complex bounds for real maps. *Ann. Inst. Fourier.*, v. 47 (1997), 1219 - 1255.
- [46] Feigenbaum-Coulet-Tresser Universality and Milnor's Hairiness Conjecture. *Ann. Math.*, v. 149 (1999), 319 - 420.
- [47] Regular and stochastic dynamics in the real quadratic family. *Proc. Nat. Acad. Sci.*, v. 95 (1998), 14025 - 14027.
- [48] Almost every real quadratic map is either regular or stochastic. *Annals Math.*, v. 156 (2002), 1 - 78.
- [49] (joint with A. Avila & W. de Melo) Regular or stochastic dynamics in real analytic families of unimodal maps. *Inventiones Math.*, v. 154 (2003), 451 – 550.
- [50] (joint with Vadim Kaimanovich) Conformal and harmonic measures on laminations associated with rational maps. *Memoirs of the AMS*, v. 173 (2005), # 820.
- [51] (joint with Jeremy Kahn) Quasi-Additivity Law in conformal geometry. *Annals of Math.*, v. 169 (2009), 561–593.
- [52] (joint with J. Kahn) Local connectivity of Julia sets for unicritical polynomials. *Annals of Math.*, v. 170 (2009).
- [53] (joint with A. Avila, J. Kahn and W. Shen) Combinatorial rigidity for unicritical polynomials. *Annals of Math.*, v. 170 (2009).
- [54] (joint with Andre de Carvalho and Marco Martens) Renormalization in the Hénon family, I. Universality but non-rigidity. *J. Stat.Phys.*, Special issue dedicated to Feigenbaum's 60th birthday, v. 121 (2005), 611–669.
- [55] (joint with A. Avila) Examples of Feigenbaum Julia sets with small Hausdorff dimension. In: "Dynamics on the Riemann sphere" (eds.: Hjorth, Poul G. and Petersen, Carsten Lunde), *Bodil Branner Festschrift* (Proceeding of the conference in honor of Bodil Branner's 60th birthday), EMS 2006.

- [56] (joint with A. Avila) Hausdorff dimension and conformal measures of Feigenbaum Julia sets. *J. of the AMS*, 21 (2008), 305–383.
- [57] (joint with J. Kahn) A priori bounds for some infinitely renormalizable quadratics, II. Decorations. *Ann. Sci. Ecole Norm. Sup.*, 41 (2008), 57–84.
- [58] (joint with M. Martens) Renormalization in the Hénon family, II: the heteroclinic web. *Inventiones Math.*, v. 186 (2011), 115–189.
- [59] (joint with A. Avila and W. Shen) Parapuzzle of the Multibrot set and typical dynamics of unimodal maps. *Journal of European Math Soc.*, v. 13 (2011), 27–56.
- [60] (joint with J. Kahn and L. Rempe) A note on hyperbolic leaves and wild laminations of rational functions. *Journal of Differential Equations*, a volume in honor of Bob Devaney 60th birthday, v. 16 (2010), 655–665.
- [61] (joint with P. Hazard and M. Martens) Renormalizable Hénon-like maps and unbounded geometry. *Nonlinearity*, v. 25 (2012), p. 397–420.
- [62] (joint with A. Avila) The full renormalization horseshoe for unimodal maps of higher degree: exponential contraction along hybrid classes. *Publications IHES*, n 114 (2012), p. 171–223.
- [63] On cycles and coverings associated to a knot (joint with Lilya Lyubich). *arXiv math 1 301.2205v1* (2013).
- [64] (joint with Anna Benini) Repelling periodic orbits and landing rays for post-singular bounded exponential maps. *Ann. Inst Fourier*, v. 64 (2014), 1493–1520.
- [65] (joint with Han Peters) Classification of invariant Fatou components for dissipative Henon maps. *GAFSA*, v. 24 (2014), 887–915.
- [66] (joint with Tanya Firsova) λ -lemma for families of Riemann surfaces and the critical loci of complex Hénon map. To appear in the *Electronic J. Conformal Geometry and Dynamics*.
- [67] (joint with Romain Dujardin) Stability and bifurcations for dissipative polynomial automorphisms of \mathbf{C}^2 . *Inventiones Math.*, v. 200 (2015), 439–511.
- [68] (joint with P. Bleher and R. Roeder) Lee-Yang zeros for the Diamond Hierarchical Lattice and 2D rational dynamics, I. Foliation of the physical cylinder. *Journal des Mathématiques Pures et Appliquées (Liouville Journal)*, v. 107 (2017), 491–590.

- [69] Quasisymmetries of Sierpinski carpet Julia sets (joint with Mario Bonk and Sergei Merenkov). *Advances in Mathematics*, v. 180 (2016).
- [70] (joint with S. Merenkov). Quasisymmetries of the basilica and the Thompson group. *GAFSA*, v. 28 (2018), 727—754.
- [71] (joint with P. Bleher and R. Roeder) Lee-Yang zeros for the Diamond Hierarchical Lattice and 2D rational dynamics, II: Global pluripotential interpretation. *J. Geometric Analysis*, v. 30 (2020), 777-833.
- [72] (joint with T. Firsova, R. Radu and R. Tanase) Hedgehogs for neutral dissipative germs of holomorphic diffeomorphisms of \mathbf{C}^2 . In: “Quelques aspects de la théorie des systèmes dynamiques: un hommage à Jean-Christoph Yoccoz (vol II)”. *Asterisque*, v. 416 (2020), 193–211.
- [73] (joint with R. Radu and R. Tanase) Hedgehogs in higher dimensions and their applications. In: “Quelques aspects de la théorie des systèmes dynamiques: un hommage à Jean-Christoph Yoccoz (vol II)”. *Asterisque*, v. 416 (2020), 213–251.
- [74] (joint with D. Dudko and N. Selinger) Pacman renormalization and self-similarity of the Mandelbrot set near Siegel parameters. *J. American Math. Soc.*, v. 33 (2020), 653–733.
- [75] (joint with S.-Y. Lee, N. Makarov, and S. Mukherjee) Schwarz reflections and anti-holomorphic correspondences. *Advances in Math.*, v. 385 (2021).
- [76] (joint with M. Martens) Probabilistic universality in two-dimensional dynamics. Preprint IMS at Stony Brook, # 2 (2011). To appear in *Comm. Math. Physics*.
- [77] (joint with H. Peters) Structure of partially hyperbolic Hénon maps. Preprint IMS at Stony Brook, # 2 (2017). To appear in *J. European Math. Soc.*

Preprints and Manuscripts

- [78] On the Lebesgue measure of the Julia set of a quadratic polynomial. Preprint IMS at Stony Brook, # 1991/10.
- [79] Ergodic theory for smooth one-dimensional dynamical systems. Preprint IMS at Stony Brook, # 11 (1991).
- [80] Six lectures on dynamics of quadratic polynomials. Manuscript 2002. www.math.stonybrook.edu/~mlyubich/papers/ (Based upon the European Lecture Series, Barcelona-Copenhagen-St. Petersburg, 1999).
- [81] (joint with J. Kahn) On topology of plane curves, or Snakes eating their tails. Manuscript 2004.

- [82] (joint with A. Avila) Lebesgue measure of Feigenbaum Julia sets. arXiv: 1504.02986 [mathDS] (2015).
- [83] (joint with D. Dudko) Local connectivity of the Mandelbrot set at some satellite parameters of bounded type. arXiv:1808.10425 (2018).
- [84] (joint with S.-Y. Lee, N. Makarov, and S. Mukherjee) Dynamics of Schwarz reflections: the mating phenomena. arXiv:1811.04979 (2018).
- [85] (joint with S.-Y. Lee, N. Makarov, and S. Mukherjee) Schwarz reflections and the tricorn. arXiv:1812.01573 (2018).
- [86] (joint with R. Lodge, S. Merenkov, and S. Mukherjee) On dynamical gaskets generated by rational maps, Kleinian groups, and Schwarz reflections. arXiv:1912.13438 (2019).
- [87] (joint with S. Merenkov, S. Mukherjee, and D. Ntalampekos) David extension of circle homeomorphisms: welding, mating, and removability arXiv:2010.11256 (2020).
- [88] (joint with J. Robertson) The critical locus of Hénon maps. arXiv:2101.12148 (2021).
- [89] (joint with N.-B. Dang and R. Grigorchuk) Self-similar groups and holomorphic dynamics: renormalization, integrability, and spectrum. arXiv:2010.00675 (2020).
- [90] (joint with D. Dudko) Uniform *a priori* bounds for neutral renormalization. Manuscript 2021.

Contributions to Proceedings and Special Volumes

- [91] Milnor's attractors, persistent recurrence and renormalization. In: "Top. Methods in Modern Math.: Symposium in honor of John Milnor's 60th birthday". Publish or Perish, 1993, 513-542.
- [92] Measure and dimension of Julia sets. In: "Linear and Complex Analysis Problem Book". Springer-Verlag, 1994, 447 -449.
- [93] (with A. Eremenko). Wandering domains for holomorphic maps. In: "Linear and Complex Analysis Problem Book". Springer-Verlag, 1994, 458 - 459.
- [94] On the borderline of real and complex dynamics. Proceedings ICM-94 (Zürich). Birkhäuser Verlag, 1995. 1203-1215.
- [95] Renormalization ideas in conformal dynamics. Current Developments in Mathematics, 1995. International Press, Cambridge, MA, 155-184.
- [96] How big is the set of infinitely renormalizable quadratics? Amer. Math. Soc. Transl., v. 184 (1998), 131 - 143.
- [97] The quadratic family as a qualitatively solvable model of chaos. "Notices of the AMS", October 2000. (Based upon a plenary talk at the joint AMS meeting in Washington, DC (Jan 2000).)
- [98] Renormalization and invariant measures in one-dimensional dynamics. Proceedings of XIIIth International Congress of Mathematical Physics, London (July 2000). International Press (2001).
- [99] Laminations and holomorphic dynamics. In: Abstracts of the International Conference "New Directions in Dynamical Systems", Kyoto (August 2002), 41 – 70.
- [100] (joint with M. Martens) Renormalization of Henon maps. "Dynamics, games and science" in honor of M. Peixoto and D. Rand, Springer.
- [101] (joint with J. Kahn) A priori bounds for some infinitely renormalizable quadratics, III. Molecules. In: "Complex Dynamics: Families and Friends". Proceeding of the conference dedicated to Hubbard's 60th birthday (ed.: D. Schleicher). Peters, A K, Limited, 2009.
- [102] Analytic low-dimensional dynamics: from dimension one to two. Proceedings ICM-14 (Seoul), v.I, 443–474.
- [103] Teichmüller space of Fibonacci maps. In: "New Trends in One-Dimensional Dynamics". In honor of Welington de Melo on the occasion of his 70th birthday. Eds. M.-J. Pacifico and P. Guarino, 2019, 221–237.

Reviews of books and work by other people

- [104] Back to the origin: Milnor’s program in dynamics. In: “Top. Methods in Modern Math.: Symposium in honor of John Milnor’s 60th birthday”. Publish or Perish, 1993, 85 - 92.
- [105] Review on the book of H. Peitgen and P. Richter “The beauty of fractals”. Algebra and Analysis, v. 1 (1989), 347 - 354.
- [106] Review on the books by C. McMullen “Complex dynamics and renormalization” and “renormalization and 3-manifolds which fiber over the circle”. Bulletin of the AMS, v. 36 (1999), 103 - 107.
- [107] Baby Mandelbrot sets, renormalization and MLC. Gazette des Mathématiciens, # 113 (2007), 45–50. Special issue in memory of Adrien Douady.
- [108] Fourty years of unimodal dynamics: on the occasion of Artur Avila winning the Brin prize. J. of Modern Dynamics., v. 6, no 2 (2012), 183–203.
- [109] John Milnor’s work in Dynamics. In: “The Abel Prize 2008–2012”, eds: H. Holden and R. Piene. Springer, 2014.
- [110] Renormalization Ideas in Dynamics: How Feigenbaum’s Discovery changed the World. Part of the Memorial Tribute to Mitchell Feigenbaum (joint with K. Khanin, E.D. Siggia and Ya. Sinai). Notices of AMS, May 2021, 761–764.

Book in preparation

- [111] Conformal geometry and dynamics of quadratic polynomials, vol. I–II, 750 pp. www.math.stonybrook.edu/~mlyubich/book.pdf