

CURRICULUM VITAE 2017

KATSUHIKO MATSUZAKI

Birth: 1963 June 8 in Tokyo, Japan (Male)

Address: Department of Mathematics, School of Education, Waseda University, Nishi-Waseda 1-6-1, Shinjuku, Tokyo 169-8050, Japan.

Phone: +81 (3) 5286-1521; Fax: +81 (3) 5286-1308

E-mail: matsuzak(at)waseda.jp

Education:

- D. Sc., March 1992, Kyoto University, Kyoto, Japan.
- M. Sc., March 1989, Kyoto University, Kyoto, Japan.
- B. Sc., March 1987, Kyoto University, Kyoto, Japan.

Thesis:

Advisor: Professor Masahiko Taniguchi.

Field: Complex Analysis, Hyperbolic Geometry, Kleinian Groups, Teichmüller Spaces.

Title: Ergodic properties of discrete groups; inheritance to normal subgroups and invariance under quasiconformal deformations.

Awards and grants:

- JSPS, Grant-in-Aid for challenging Exploratory Research, April 2016-March 2019 (#16K13767).
- JSPS, Grant-in-Aid for Scientific Research (B), April 2013-March 2018 (#25287021).
- Grant-in-Aid for JSPS Fellows (Host), October 2014-March 2015 (#14F04321).
- JSPS, Grant-in-Aid for challenging Exploratory Research, April 2012-March 2015 (#24654035).
- JSPS, Grant-in-Aid for Scientific Research (B), April 2008-March 2013 (#20340030).
- JSPS, Grant-in-Aid for Exploratory Research, April 2008-March 2011 (#20654016).
- JSPS, Grant-in-Aid for Scientific Research (B), April 2004-March 2008 (#16340036).
- JSPS, Grant-in-Aid for Scientific Research (C), April 2002-March 2004 (#14540156).
- JSPS, Grant-in-Aid for Young Scientists (A), April 2000-March 2002 (#12740082).
- JSPS, Postdoctoral Fellowships for Research Abroad, Visiting scholar of the University of Michigan, October 1997-September 1999.
- The Ministry of Education, Grant-in-Aid for Scientific Research (C), April 1997-September 1997 (#09640164).
- Mathematical Society of Japan, Takebe Prize, November 1996.
- The Ministry of Education, Grant-in-Aid for Young Scientists (A), April 1996-March 1997 (#08740090).

- JSPS and the Academy of Finland, Scientist Exchange Program, Visiting scholar of Helsinki University, April 1995-September 1995.
- The Ministry of Education, Grant-in-Aid for Young Scientists (A), April 1994-March 1995 (#06854004).
- The Ministry of Education, Grant-in-Aid for Young Scientists (A), April 1993-March 1994 (#05740085).

Employment:

- 1990 - 1995: Research Assistant, Department of Mathematics, Tokyo Institute of Technology.
- 1995 - 2005: Associate Professor and Professor (2005), Department of Mathematics, Ochanomizu University.
- 2006 - 2009: Professor, Department of Mathematics, Okayama University.
- 2008: Visiting Scholar, Department of Mathematics, Wesleyan University.
- 2010 - current: Professor, Department of Mathematics, School of Education, Waseda University.

Publications:

PAPERS

- [1] K. Matsuzaki, *Certain estimates on Kleinian groups by the core of their quotient 3-manifold*, Kodai Math. J. **13** (1990), 377–385.
- [2] K. Matsuzaki, *A characterization of extended Schottky type groups with a remark to Ahlfors' conjecture*, J. Math. Kyoto Univ. **31** (1991), 259–264.
- [3] J. A. Velling and K. Matsuzaki, *The action at infinity of conservative groups of hyperbolic motions need not have atoms*, Ergod. Th. & Dynam. Sys. **11** (1991), 577–582.
- [4] K. Matsuzaki, *Geometric finiteness, quasiconformal stability and surjectivity of the Bers map for Kleinian groups*, Tohoku Math. J. **43** (1991), 327–336.
- [5] K. Matsuzaki, *Ergodic properties of discrete groups; inheritance to normal subgroups and invariance under quasiconformal deformations*, J. Math. Kyoto Univ. **33** (1993), 205–226.
- [6] K. Matsuzaki, *Simply connected invariant domains of Kleinian groups not in the closures of Teichmüller spaces*, Complex Variables **22** (1993), 93–100.
- [7] K. Matsuzaki and J. A. Velling, *Notes on projective structures and Kleinian groups*, Osaka J. Math. **31** (1994), 165–175.
- [8] K. Matsuzaki, *The conservative-dissipative dichotomy for geometric covers of Riemann surfaces*, Rev. Roumaine Math. Pures Appl. **40** (1995), 77–80.
- [9] K. Matsuzaki, *Teichmüller spaces with variable bases in the universal Teichmüller space*, Ann. Acad. Sci. Fenn. **20** (1995), 27–36.
- [10] K. Matsuzaki, *Projective structures inducing covering maps*, Duke Math. J. **78** (1995), 413–425.
- [11] K. Matsuzaki, *Bounded and integrable quadratic differentials : hyperbolic and extremal lengths on Riemann surfaces*, Geometric Complex Analysis (J. Noguchi et al., eds.), World Scientific, 1996, pp. 443–450.
- [12] K. Matsuzaki and H. Shiga, *Conformal conjugation of Fuchsian groups from the first kind to the second kind*, J. reine angew. Math. **476** (1996), 191–200.
- [13] K. Matsuzaki, *The Petersson series for short geodesics*, Proceedings of the XVI Rolf Nevanlinna Colloquium (I. Laine and O. Martio, eds.), Walter de Gruyter, 1996, pp. 143–150.
- [14] K. Matsuzaki, *Structural stability of Kleinian groups*, Michigan Math. J. **44** (1997), 21–36.
- [15] K. Matsuzaki, *Conditional stability of Kleinian groups*, Sci. Bull. Josai Univ. **4** (1998), 25–28.
- [16] K. Matsuzaki, *The isomorphism theorem of Kleinian groups*, Analysis and Topology (A. Cazacu, O. Lehto and T. Rassias, eds.), World Scientific, 1998, pp. 507–513.

- [17] K. Matsuzaki, *Dynamics of Kleinian groups — the Hausdorff dimension of limit sets*, Sugaku (1999), no. 2, 142–160 (Japanese); K. Nomizu (ed.), Selected papers on classical analysis, AMS Translations (2), vol. 204, American Mathematical Society, 2001, pp. 23–44.
- [18] K. Matsuzaki, *The Hausdorff dimension of the limit sets of infinitely generated Kleinian groups*, Math. Proc. Cambridge Philos. Soc. **128** (2000), 123–139.
- [19] K. Matsuzaki, *Convergence of the Hausdorff dimension for algebraically convergent sequences of Kleinian groups*, In the tradition of Ahlfors and Bers (I. Kra and B. Maskit, eds.), Contemporary Math., vol. 256, American Mathematical Society, 2000, pp. 243–254.
- [20] K. Matsuzaki, *Simply connected domains on a hyperbolic surface*, New Zealand J. Math. **31** (2002), 159–164.
- [21] K. Matsuzaki, *Conservative action of Kleinian groups with respect to the Patterson-Sullivan measure*, Comput. Methods Funct. Theory **2** (2002), 469–479.
- [22] K. Matsuzaki, *The infinite direct product of Dehn twists acting on infinite dimensional Teichmüller spaces*, Kodai Math. J. **26** (2003), 279–287.
- [23] K. Matsuzaki, *Inclusion relations between the Bers embeddings of Teichmüller spaces*, Israel J. Math. **140** (2004), 113–124.
- [24] K. Matsuzaki, *Indecomposable continua and the limit sets of Kleinian groups*, In the tradition of Ahlfors and Bers, III (W. Abikoff and A. Haas, eds.), Contemporary Math., vol. 355, American Mathematical Society, 2004, pp. 321–332.
- [25] K. Matsuzaki, *Isoperimetric constants for conservative Fuchsian groups*, Kodai Math. J. **28** (2005), 292–300.
- [26] K. Matsuzaki, *A countable Teichmüller modular group*, Trans. Amer. Math. Soc. **357** (2005), 3119–3131.
- [27] E. Fujikawa and K. Matsuzaki, *Recurrent and periodic points for isometries of L^∞ spaces*, Indiana Univ. Math. J. **55** (2006), 975–997.
- [28] K. Matsuzaki, *The interior of discrete projective structures in the Bers fiber*, Ann. Acad. Sci. Fenn. **32** (2007), 3–12.
- [29] E. Fujikawa and K. Matsuzaki, *Non-stationary and discontinuous quasiconformal mapping class groups*, Osaka J. Math. **44** (2007), 173–185.
- [30] K. Matsuzaki, *A quasiconformal mapping class group acting trivially on the asymptotic Teichmüller space*, Proc. Amer. Math. Soc. **135** (2007), 2573–2579.
- [31] K. Matsuzaki, *A classification of the modular transformations of infinite dimensional Teichmüller spaces*, In the tradition of Ahlfors and Bers, IV (R. Canary et al., eds.), Contemporary Math., vol. 432, American Mathematical Society, 2007, pp. 167–178.
- [32] K. Matsuzaki, *Quasiconformal mapping class groups having common fixed points on the asymptotic Teichmüller spaces*, J. d'Analyse Math. **102** (2007), 1–28.
- [33] E. Fujikawa, K. Matsuzaki and M. Taniguchi, *Dynamics on Teichmüller spaces and holomorphic self-covering of Riemann surfaces*, Math. Zeitschrift **260** (2008), 865–888.
- [34] E. Fujikawa and K. Matsuzaki, *Elliptic quasiconformal mapping classes acting on asymptotic Teichmüller spaces*, Complex Analysis and its Applications (Y. Iwayoshi et al., eds.), OCAMI Studies, vol. 2, Osaka Municipal Univ. Press, 2008, pp. 169–173.
- [35] K. Matsuzaki and Y. Yabuki, *Invariance of the Nayatani metrics for Kleinian manifolds*, Geom. Dedicata **135** (2008), 147–155.
- [36] K. Matsuzaki, *On quasiconformal invariance of convergence and divergence types for Fuchsian groups*, Illinois J. Math. **53** (2009), 1249–1258.
- [37] K. Matsuzaki and Y. Yabuki, *The Patterson-Sullivan measure and proper conjugation for Kleinian groups of divergence type*, Ergodic Theory Dynam. Systems **29** (2009), 657–665.
- [38] K. Matsuzaki and Y. Yabuki, *An example of self-covering of Riemann surface*, Proceedings of the 16th ICFIDCAA (J. Choi et al., eds.), Dongguk Univ., Daeyang Printing, 2009, pp. 184–188.
- [39] K. Matsuzaki, *The action of elliptic modular transformations on asymptotic Teichmüller spaces*, Teichmüller Theory and Moduli Problem (I. Biswas, R. S. Kulkarni and S. Mitra, eds.), Ramanujan Math. Soc. Lecture Notes Series, vol. 10, 2010, pp. 481–488.
- [40] K. Matsuzaki, *Symmetric groups that are not the symmetric conjugates of Fuchsian groups*, In the tradition of Ahlfors and Bers, V (M. Bonk et al., eds.), Contemporary Math., vol. 510, American Mathematical Society, 2010, pp. 239–247.

- [41] E. Fujikawa, K. Matsuzaki and M. Taniguchi, *Structure theorem for holomorphic self-covers and its applications*, Infinite dimensional Teichmüller space and moduli space (E. Fujikawa, ed.), RIMS Kokyuroku Bessatsu, vol. B17, Research Institute of Mathematical Sciences, Kyoto Univ., 2010, pp. 21–36.
- [42] K. Matsuzaki, *An averaging operator and non-separability of certain Banach spaces of holomorphic automorphic forms*, Infinite dimensional Teichmüller space and moduli space (E. Fujikawa, ed.), RIMS Kokyuroku Bessatsu, vol. B17, Research Institute of Mathematical Sciences, Kyoto Univ., 2010, pp. 65–72.
- [43] K. Matsuzaki, *Properties of asymptotically elliptic modular transformations of Teichmüller spaces*, Infinite dimensional Teichmüller space and moduli space (E. Fujikawa, ed.), RIMS Kokyuroku Bessatsu, vol. B17, Research Institute of Mathematical Sciences, Kyoto Univ., 2010, pp. 73–84.
- [44] K. Falk, K. Matsuzaki and B. O. Stratmann, *Checking atomicity of conformal ending measures for Kleinian groups*, Conform. Geom. Dyn. **14** (2010), 167–183.
- [45] K. Matsuzaki and J. M. Rodríguez, *Twists and Gromov hyperbolicity of Riemann surfaces*, Acta Math. Sin. (Engl. Ser.) **27** (2011), 29–44.
- [46] E. Fujikawa and K. Matsuzaki, *Stable quasiconformal mapping class groups and asymptotic Teichmüller spaces*, Amer. J. Math. **133** (2011), 637–675.
- [47] K. Matsuzaki, *Polycyclic quasiconformal mapping class subgroups*, Pacific J. Math. **251** (2011), 361–374.
- [48] P. Bonfert-Taylor, K. Matsuzaki and E. Taylor, *Large and small covers of a hyperbolic manifold*, J. Geom. Anal. **22** (2012), 455–470.
- [49] K. Matsuzaki, *The Petersson series vanishes at infinity*, Quasiconformal mappings, Riemann surfaces, and Teichmüller spaces (Y. Jiang and S. Mitra, eds.), Contemporary Math., vol. 575, American Mathematical Society, 2012, pp. 299–311.
- [50] E. Fujikawa and K. Matsuzaki, *The Nielsen realization problem for asymptotic Teichmüller modular groups*, Trans. Amer. Math. Soc. **365** (2013), 3309–3327.
- [51] E. Fujikawa and K. Matsuzaki, *Non-divergent infinitely discrete Teichmüller modular transformation*, Topics in finite or infinite dimensional complex analysis (K. Matsuzaki and T. Sugawa, eds.), Tohoku Univ. Press, 2013, pp. 97–102.
- [52] K. Matsuzaki and Y. Yabuki, *No proper conjugation for quasiconvex cocompact groups of Gromov hyperbolic spaces*, In the tradition of Ahlfors-Bers. VI (U. Hamenstädt et al., eds.), Contemporary Math., vol. 590, American Mathematical Society, 2013, pp. 125–136.
- [53] K. Matsuzaki, *An estimate of the maximal dilatations of quasiconformal automorphisms of annuli*, Complex Var. Elliptic Equ. **58** (2013), 923–932.
- [54] K. Matsuzaki, *Certain integrability of quasisymmetric automorphisms of the circle*, Comput. Methods Funct. Theory **14** (2014), 487–503.
- [54] K. Matsuzaki, *Infinite-dimensional Teichmüller spaces and modular groups*, Handbook of Teichmüller theory. Vol. IV (A. Papadopoulos, ed.), IRMA Lect. Math. Theor. Phys., vol. 19, Eur. Math. Soc., 2014, pp. 681–716.
- [55] K. Falk and K. Matsuzaki, *The critical exponent, the Hausdorff dimension of the limit set and the convex core entropy of a Kleinian group*, Conform. Geom. Dyn. **19** (2015), 159–196.
- [56] K. Matsuzaki, *The universal Teichmüller space and diffeomorphisms of the circle with Hölder continuous derivatives*, Handbook of group actions. Vol. I (L. Ji, A. Papadopoulos and S. T. Yau, eds.), Adv. Lect. Math., vol. 31, Int. Press, 2015, pp. 333–372.
- [57] K. Matsuzaki, *Uniform convexity, normal structure and the fixed point property of metric spaces*, Topology Appl. **196** (2015), 684–695.
- [58] K. Matsuzaki, *The Chabauty and the Thurston topologies on the hyperspace of closed subsets*, J. Math. Soc. Japan **69** (2017), 263–292.
- [59] K. Matsuzaki and M. Yanagishita, *Asymptotic conformality of the barycentric extension of quasiconformal maps*, Filomat **31** (2017), 85–90.
- [60] K. Matsuzaki, *The hyperbolic metric on the complement of the integer lattice points in the plane*, New Trends in Analysis and Interdisciplinary Applications (P. Dang et al., eds.), Trends in Mathematics, Birkhäuser, 2017, pp. 247–252.
- [61] K. Matsuzaki and J. M. Rodríguez, *Planar Riemann surfaces with uniformly distributed cusps: parabolicity and hyperbolicity*, Math. Nachr. **290** (2017), 1097–1112.

- [62] J. Jaerisch and K. Matsuzaki, *Growth and cogrowth of normal subgroups of a free group*, Proc. Amer. Math. Soc. **145** (2017), 4141–4149.
- [63] K. Matsuzaki, *The Teichmüller space of group invariant symmetric structures on the circle*, Ann. Acad. Sci. Fenn. Math. **42** (2017), 535–550.
- [64] K. Matsuzaki, *Continuity of the barycentric extension of circle diffeomorphisms with Hölder continuous derivative*, Trans. London Math. Soc. **4** (2017), 129–147.
- [65] K. Matsuzaki, *Circle diffeomorphisms, rigidity of symmetric conjugation and affine foliation of the universal Teichmüller space*, Geometry, Dynamics, and Foliations 2013 (T. Aduke et. al., eds.), Advanced Studies in Pure Mathematics 72, Mathematical Society of Japan, 2017, pp. 145–180.
- [66] K. Matsuzaki, *Growth and cogrowth tightness of Kleinian and hyperbolic groups*, Geometry and Analysis of Discrete Groups and Hyperbolic Spaces (M. Fujii et. al., eds.), RIMS Kokyuroku Bessatsu B66, Research Institute of Mathematical Sciences, 2017, pp. 21–36.

BOOKS

- [I] K. Matsuzaki and M. Taniguchi, *Hyperbolic Manifolds and Kleinian Groups*, Oxford Univ. Press, 1998.