Wenyuan YANG

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Positions

Full Professor, Beijing International Center for Mathematical Research (BICMR), Peking University, March. 2024 – present.

Associate Professor, Beijing International Center for Mathematical Research (BICMR), Peking University, Aug. 2020 – Feburary. 2024.

Assistant Professor, Beijing International Center for Mathematical Research (BICMR), Peking University, Mar. 2014 – July 2020.

Visiting Scholar, Beijing International Center for Mathematical Research (BICMR), Peking University, Oct. 2013 – Feb. 2014.

Postdoctoral Researcher. Université Paris-Sud 11, Sep. 2011 – Sep. 2013. Mentor: Anna Erschler.

Education

Ph.D. Mathematics, Université de Lille 1, Sep 2008 – May 2011.
   Thesis Advisor: Leonid Potyagailo.
   Thesis Title: Peripheral structures of relatively hyperbolic groups.

M.S. Mathematics, Hunan University, Changsha, China, 2005 – 2008.
   Master Advisor: Yueping Jiang.

B.S. Mathematics, Hunan University, Changsha, China, 1999 – 2003.

Research Interests

Geometric Group Theory and Low Dimensional Topology

Grants & Honors

The National Natural Science Foundation of China (No. 12326601). (2024.1 - 2025.12), PI.

The National Natural Science Foundation of China (No. 12131009). (2022.1 - 2026.12), Co-PI.

National Key Research & Development Program of China (SQ2020YFA070059). (2021.01-2025.12), Co-PI.

The National Natural Science Foundation of China (No. 11771022). (2018.1 - 2021.12), PI.

The Thousand Young Talents Program Award from Chinese government. (2014.3 - 2017.3), PI.

Postdoc Fellowship (2011.9 - 2013.9) under Professor Anna Erschler's ERC starting grant GA 257110 "RaWG".

China-funded Postgraduates Studying Aboard Program for Building Top University (2008.9 - 2011.9).

Oberwolfach Leibniz Graduate Students Grant Mathematisches Forschungsinstitut Oberwolfach, Germany (2010).

Preprint

[1] Renxing Wan, Xiaoyu Xu and W.Y. Yang. *Marked length spectrum rigidity in groups with contracting elements*. Preprint 2024, Arxiv: 2402.10165

[2] Matthieu Dussaule, Longmin Wang and Wenyuan Yang. *The growth of the Green function for random walks and Poincaré series*. Preprint 2023, Arxiv: 2307.10662

[3] Renxin Wan and Wenyuan Yang. *Uniform exponential growth for groups with proper product actions on hyperbolic spaces*. Preprint 2023, Arxiv: 2307.08400

[4] Suzhen Han, Wenyuan Yang and Yanqing Zou. *Counting double cosets with application to generic 3-manifolds*. Preprint 2023, Arxiv: 2307.06169

[5] Matthieu Dussaule, Longmin Wang and Wenyuan Yang. *Branching random walks on relatively hyperbolic groups*. Preprint 2022, Arxiv: 2211.07213

[6] Wenyuan Yang. *Conformal dynamics at infinity for groups with contracting elements*. Preprint 2022, Arxiv: 2208.04861

Publications

[1] Suzhen Han, Hoang Thanh Nguyen and Wenyuan Yang. *Property (QT) of 3-manifold groups*. Preprint 2021, Accepted to Algebraic and Geometric Topology, Arxiv: 2108.03361

[2] Matthieu Dussaule and Wenyuan Yang. *The Hausdorff dimension of the harmonic measure for relatively hyperbolic groups*. Trans. Amer. Math. Soc. Ser. B 10 (2023), 766-806.

[3] Hoang Thanh Nguyen and Wenyuan Yang. *Croke-Kleiner admissible groups: Property (QT) and quasiconvexity*. Michigan Mathematical Journal, 73(5), 971-1019, 2023

[4] Yumiao Cui, Yueping Jiang and Wenyuan Yang. *Lower bound on growth of non-elementary subgroups in relatively hyperbolic groups*. Journal of Group Theory, v25(5), 799–822, 2022

[5] Ilya Gekhtman and Wenyuan Yang. *Counting conjugacy classes in groups with contracting elements*. Journal of Topology, v15(2) 620–665, 2022

[6] Wenyuan Yang, *Patterson-Sullivan measures and growth of relatively hyperbolic groups*, Peking Mathematical Journal, 5: 153–212 (2022)

[7] Ilya Gekhtman, Victor Gerasimov, Leonid Potyagailo and Wenyuan Yang. *Martin boundary covers Floyd boundary*. Inventiones Mathematicae, no 223, 759–809(2021)

[8] Suzhan Han and Wenyuan Yang. *Generic free subgroups and statistical hyperbolicity*. Groups, Geometry, and Dynamics, Vol 15, 2021, 101–140

[9] Hoang Thanh Nguyen, Hung Cong Tran and Wenyuan Yang. *Quasiconvexity in 3-manifold groups*. Mathematische Annalen (2021) 381:405–437

[10] Zunwu He, Jinsong Liu and Wenyuan Yang. *Large quotients of group actions with a contracting element*. Proceedings of the International Consortium of Chinese Mathematicians, 2017, 319–338.

[11] Wenyuan Yang. *Genericity of contracting elements in groups*. Mathematische Annalen, volume 376, 823–861 (2020)

[12] Leonid Potyagailo and Wenyuan Yang. *Hausdorff dimension of boundaries of relatively hyperbolic groups*. Geometry and Topology, No. 23 (2019) 1779–1840

[13] Wenyuan Yang. *Statistically convex-cocompact actions of groups with contracting elements*. International Mathematics Research Notices, No. 23, 2019, 7259–7323

[14] Wenyuan Yang. *Purely exponential growth of cusp-uniform actions*. Ergodic Theory and Dynamical Systems, v39(3), 2019, 795–831

[15] Jeremy Osborne and Wenyuan Yang. *Statistical hyperbolicity of relatively hyperbolic groups*. Algebraic and Geometric Topology, 16 (2016) 2143–2158.

[16] Wenyuan Yang, *Growth tightness for groups with contracting elements*, Math. Proc. Cambridge Philos. Soc., 157(2014), 297–319.

[17] Wenyuan Yang, *Peripheral structures of relatively hyperbolic groups*, Journal für reine und angewandte Mathematik, 689(2014), 101–135.

[18] Wenyuan Yang, *Limit sets of relatively hyperbolic groups*, Geom. Dedicata., 156(2012), 1–12.

[19] Wenyuan Yang, *Separable subgroups have bounded packing*, Proc. Amer. Math. Soc., 139(2011), 3217–3218.

[20] Wenyuan Yang and Yueping Jiang, *Limit sets and commensurability of Kleinian groups*, Bull. Aust. Math. Soc., 82(1–9), 2010.

Teaching Experience

Calculus: 2019/2017/2016 Fall.   Linear Algebra: 2018 Fall.

Introduction to differential manifolds: 2019 Spring.   General Topology: 2022 Fall

Hyperbolic manifolds: 2021 Spring.   Honor Class on Geometry: 2017/2022 Spring.

Geometric Group Theory: 2023(S)/2020(F)/2018(S)/2016(S)/2015(S)/2011(S).

PhD Students under supervision

Chaodong Yang, Sep. 2023 – .

Le Zhang, Sep. 2022 – .

Lihuang Ding, Sep. 2021 – .

Kairui Liu, Sep. 2021 – .

Renxin Wan, Sep. 2019 – expected on June 2024.

Zhengguo HuangFu, Sep. 2019 – expected on June 2024.

Suzhen Han, Sep. 2016 – June. 2021. Assistant Professor at Hunan University (since 2023).

Zunwu He (AMSS), Sep. 2014 – June 2019 (co-advised with Prof. Jinsong Liu at AMSS). Assistant Professor at South China University of Technology (since 2022).

Postdocs under supervision

Fei Tao, Sep. 2023 - Sep 2025.

Hoang Thanh Nguyen, Sep. 2020 - Sep 2022. Now, Assistant Professor at the University of Danang - University of Science and Education.

Zhiqiang Xiao, Sep. 2018 - Sep 2020. Now, Assistant Professor at TaiZhou University.

Activities

Seminars on Conformal dynamics and groups, Sep. 2019 – (co-organized with Zhiqiang Li)

Reading seminars on Teichmüller theory and quasiconformal mapping, Fall semester 2018 (co-organized with Huabin Ge)

Conference on Geometric Group Theory, July 16-20, 2017 (co-organized with Lawrence Reeves and Xiang Fu)

Workshop on Geometric Group Theory, December 16-17, 2016 (co-organized with Xiang Fu)

Conference and Seminar Talks

Generic 3-manifolds are hyperbolic, Conference on differential geometry, Hunan University, 9.28-9.31 2023

Branching random walks on relatively hyperbolic groups, Summer school in Geometric Group Theory, Fudan University, 8.7-8.11 2023

Generic 3-manifolds are hyperbolic, Conference on geometric topology, Xiamen University, 7.4-7.8 2023

12-hour lectures on Hyperbolic geometry, Qiushi Summer school, Zhejiang University, 7.3-7.15 2022

3-hour lectures on Hyperbolic-like boundary of groups, Summer school in Geometric Group Theory, Fudan University, 8.15-8.19 2022

The Hausdorff dimension of the harmonic measure for relatively hyperbolic groups, The 16th East Asian Conference on Geometric Topology, Plenary speaker, ONLINE conference organized by members in Tokyo, an 28th 2021

Property (QT) of 3-manifold groups Conference on Geometric Topology, Suzhou University, Nov 6th 2021

Property (QT) of Croke-Kleiner admissible groups, Low dimensional Topology Shenzhen, SUSTech, 13th-15th Nov 2020

Counting conjugacy classes of groups with contracting elements, The Pan Pacific International Conference on Topology and Applications, Chengdu, China, Nov 8 - 13 2019.

Martin boundary of groups with contracting elements, Conference on Geometry and Topology, Xi'an Jiaotong University, Xi'an, Sep. 21-23 2019.

Martin boundary covers Floyd boundary, Dynamic seminar, Seoul National University, Korea, May 13 - 17 2019.

3-Hour lectures on Floyd and Martin boundaries for a group, Ergodic Geometry 2019, TIFR, Mumbai, Indea, March 25-29 2019.

Counting conjugacy classes in groups with contracting elements, the 4th KTGU Mathematics Workshop for Young Researchers, Kyoto university, Japan, Sep 29 2018.

Martin boundary covers Floyd boundary, Silk road Geometry Conference, Gokova Geometry Topology Institute, Turkey, June 4 - 8 2018.

Genericity of contracting elements in nonpositively curved groups, Nonpositively Curved Groups on the Mediterranean, Nahsholim, Israel, May 23 - 29 2018.

Asymptotic geometry of statistical convex-cocompact actions, the 13th East Asian School of Knots and Related Topics, Daejeon, Korea, Jan 29 - Feb 1 2018.

Hausdorff dimension of boundaries of relatively hyperbolic groups, Complex analysis annual conference at Qufu Normal University, 20-25 Sep. 2017, Qufu

Genericity of contracting elements in groups, Geometry and Topology workshop at Soochow University, 23-28 July. 2017, Soochow

Asymptotic geometry of statistical convex-cocompact actions, Geometry and Topology workshop at Tsinghua University, 9 Avril. 2017, Beijing

3 Lectures on "Introduction to hyperbolic groups", Conference on Graphs and related topics at Fudan University, 14-17 Feb. 2017, Shanghai

Counting problems in Geometric Group Theory, Colloquiums at Beijing Normal University, 16 Dec. 2016, Beijing

Growth tightness and contracting elements, Seminars at AMSS, Chinese Academy of Sciences, 17 Nov. 2016

Asymptotic geometry of statistical convex-cocompact actions, 70th Annual Meeting of Korean Mathematical Society, 22-23 Oct 2016, Seoul, South Korea

2-hour lectures on "applications of Patterson-Sullivan measures", Geometric Group Theory workshop, 15-16 Oct 2016, Soochow University

Asymptotic geometry of groups with a contracting element, Annual Meeting of Chinese Mathematical Society, Sep. 23-24, Inner Mongolia University

Asymptotic geometry of groups with a contracting element, Geometric and algebraic topology seminar, 21-23 July 2016, Beijing Capital Normal university

8-hour lectures on "Hyperbolic groups and boundaries", The Third China-Russia Workshop on Knot Theory and Related Topics, 10-14 July 2016, Soochow University

Purely exponential growth of cusp-uniform actions, International Workshop on Low Dimensional Topology, 6-7 May 2016, Dalian University of Technology

Hausdorff dimension of boundaries of relatively hyperbolic groups, Workshop on Teichmuller Theory and Low-Dimensional Topology, 11-15 Jan 2016, Tsinghua Sanya International Mathematics Forum

Hausdorff dimension of boundaries of relatively hyperbolic groups, Topology & Dynamics seminar, Universite Lille 1, France, 23/10/2015.

Hausdorff dimension of boundaries of relatively hyperbolic groups, GAGTA 2015 - Geometric and Asymptotic Group Theory with Applications, Luminy, France,14/09/2015-18/09/2015.

4-Hour Minicourse on "Hyperbolic groups", Workshop on MCGs and related topics, Xi'an Jiaotong University,16/08/2015-20/08/2015.

Hausdorff dimension of boundaries of relatively hyperbolic groups, Seminar Talk, Beihang University, Beijing, 26/05/2015.

Hausdorff dimension of boundaries of relatively hyperbolic groups, Conference on Algebraic Topology & Geometric Topology, Beijing, 29/05/2015-31/05/2015.

Rotating family with applications to MCGs after Dahmani-Gruirardel-Osin, Youth forum in Topology, Tongji University, Shanghai,15/05/2015-27/05/2015.

6-hour Lectures on "Patterson-Sullivan measures of relatively hyperbolic groups", Waseda University, Japan 15/03/2015-22/03/2015.

Boundary of hyperbolic groups (II), Seminars at AMSS, Chinese Academy of Sciences, 28/10/2014.

Boundary of hyperbolic groups (I), Seminars at AMSS, Chinese Academy of Sciences, 14/10/2014.

Growth of quotients of relatively hyperbolic groups, The Chinese Mathematical Society Annual Conference, HeNan Normal University, 20/09/2014.

Growth of quotients of relatively hyperbolic groups, Poster session, Hyperbolic geometry and geometric group theory, Tokyo, Japan, 29/07/2014-05/08/2014.

Growth tightness for groups with contracting elements, Geometry and Topology Seminar, Capital Normal University, 1. 04/06/2014.

Growth tightness of groups with nontrivial Floyd boundary, Université de Lille 1, Geometrie & Dynamique Seminar, March 2013.

Combination of fully quasiconvex subgroups and its applications Université Paris-Sud 11, Théorie Géométrique des Groupes Seminar, Feb. 2013.

Growth of quotients of relatively hyperbolic groups, Geometric and Dynamical Aspects of Discrete Groups, Université de Lille 1, Sep 2013.

Growth tightness of groups with nontrivial Floyd boundary, Peking University, Geometry & Topology Seminar, Nov 2013.

Combination of fully quasiconvex subgroups and its applications. Université Joseph Fourier, Facets of discrete groups, Grenoble, Dec. 2012.

Combination of fully quasiconvex subgroups and its applications. Hunan University, Changsha,

China, June. 2012.

Peripheral structures of relatively hyperbolic groups. Paris 6 Jussieu, Parole aux jeunes chercheurs, Nov. 2011.

Peripheral structures of relatively hyperbolic groups. Université Paris-Sud 11, Théorie Géométrique des Groupes Seminar, Oct. 2011.

Peripheral structures of relatively hyperbolic groups. Université de Lille 1, Geometrie & Dynamique Seminar, Nov. 2010.

Limit sets of relatively hyperbolic groups. Hunan University, Complex Hyperbolic Geometry Conference, Changsha, China, July 2010.

Limit sets and commensurability of Kleinian groups. Université du Littoral, Journées Doctorants de Mathématiques Nord Pas de Calais, April 2010.

Limit sets of relatively hyperbolic groups. Université de Lille 1, Geometrie & Dynamique Seminar, Feb. 2010.

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