Sang-hyun Kim

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85 Hoegiro, Dongdaemun-gu   Homepage: `https://www.kimsh.kr`
Seoul 02455, Korea

Education

Ph.D. Mathematics, Yale University, May 2007.

> *Dissertation:* Surface subgroups of graph products of groups and right-angled Artin groups.
> *Thesis Advisor:* Andrew J. Casson.

B.S. Mathematics, Seoul National University, August 1997.

Fields of Interest

Geometric group theory, low-dimensional topology.

Academic Positions

Professor, Korea Institute for Advanced Study (KIAS), Feb 2019 – present.

Adjunct Professor, KAIST, Sep 2019 – present.

Associate Professor, Seoul National University, March 2014 – Jan 2019.

Associate Professor, KAIST, September 2013 – February 2014.

Assistant Professor, KAIST, June 2010 – August 2013.

Norbert Wiener Assistant Professor, Tufts University, September 2010 – May 2011.

R. H. Bing Instructor, the University of Texas at Austin, January 2008 – August 2010.

Post-doctoral Fellow, Mathematics Sciences Research Institute (MSRI), September – December 2007.

Publications

Published

31. Sang-hyun Kim and Thomas Koberda. Non-freeness of groups generated by two parabolic elements with small rational parameters, Michigan Mathematical Journal, 71(4): 809-833 (November 2022). doi: 10.1307/mmj/20205868

30. Sang-hyun Kim and Genevieve Walsh. Some groups with planar boundaries, Surveys in Differential Geometry (2022).

29. Sang-hyun Kim, Thomas Koberda and Cristóbal Rivas. Virtual critical regularity of mapping class group actions on the circle, Transformation Groups (2022).

28. Sang-hyun Kim and Thomas Koberda. Structure and regularity of group actions on one-manifolds, Springer Monographs in Mathematics, 323 pages (2021).

27. Sang-hyun Kim, Thomas Koberda and Cristóbal Rivas. Direct products, overlapping actions, and critical regularity, Journal of Modern Dynamics, Vol. 17 (June 2021), 285-304.

26. Sang-hyun Kim, Thomas Koberda, Jaejeong Lee, Ken'ichi Ohshika and Ser Peow Tan; appendix by Xinghua Gao. Shapes of hyperbolic triangles and once-punctured torus groups, Mathematische Zeitschrift (2021) doi:10.1007/s00209-021-02745-3

25. Sang-hyun Kim and Thomas Koberda. Integrability of moduli and regularity of Denjoy counterexamples. Discrete and Continuous Dynamical Systems (Series A), October 2020, 40(10): 6061-6088.

24. Chritian Bonatti, Sang-hyun Kim, Thomas Koberda and Michele Triestino. Small C^1 actions of semidirect products on compact manifolds, Algebraic & Geometric Topology **20** (2020) 3183–3203.

23. Sang-hyun Kim and Thomas Koberda. Diffeomorphism groups of critical regularity. Inventiones mathematicae , 221(2), 421-501 (2020).

22. Sang-hyun Kim, Thomas Koberda and Mahan Mj, Flexibility of Group Actions on the Circle, Springer Lecture Notes in Mathematics 2231 (2019).

21. Sang-hyun Kim, Thomas Koberda and Yash Lodha, Chain groups of homeomorphisms of the interval and the circle, Annales Scientifiques de l'École Normale Supérieure, Series 4, Volume (52), 2019, 797-820.

20. Hyungryul Baik, Sang-hyun Kim and Thomas Koberda. Unsmoothable group actions on compact one-manifolds, Journal of European Mathematical Society, Volume 21, Issue 8, 2019, pp. 2333–2353

19. Sang-hyun Kim and Thomas Koberda, Free products and algebraic structures of diffeomorphism groups, Journal of Topology, Volume 11, Issue 4, December 2018, Pages 1053-1075.

18. Surface subgroups of word-hyperbolic groups (survey), Handbook of group actions. Vol. III, 89-102, Adv. Lect. Math. (ALM), 40, Higher Education Press and International Press, Beijing-Boston.

17. Sang-hyun Kim and Thomas Koberda. RAAGs in Diffeos (survey), Advanced Studies in Pure Mathematics: Volume 73, 215-224 (2017).

16. Sang-hyun Kim, Cheol-Hyun Cho, Hansol Hong and Siu-Cheong Lau, Lagrangian Floer potential of orbifold spheres, Volume 306 (14 January 2017), Pages 344–426, Advances in Mathematics.

15. Sang-hyun Kim, Hyungryul Baik and Thomas Koberda, Right-angled Artin subgroups of the C^∞ interval diffeomorphism group, Israel Journal of Mathematics, June 2016, Volume 213, Issue 1, pp 175-182.

14. Sang-hyun Kim and Thomas Koberda, Right-angled Artin groups and finite subgraphs of curve graphs, Osaka Journal of Mathematics, Volume 53, Number 3 (2016), 705-716.

13. Sang-hyun Kim and Thomas Koberda, Anti-trees and right-angled Artin subgroups of braid groups, Geometry & Topology 19-6 (2015), 3289–3306.

12. Sang-hyun Kim and Genevieve Walsh, Coxeter groups, hyperbolic cubes, and acute triangulations, Journal of Topology (2016) 9 (1): 117-142.

11. Sang-hyun Kim and Thomas Koberda, The geometry of the curve complex of a right-angled Artin group, *International Journal of Algebra and Computation* 24 (121) (2014).

10. Sang-hyun Kim and Sang-il Oum, Hyperbolic Surface subgroups of one-ended doubles of free groups, Journal of Topology (2014) 7 (4): 927–947.

9. Sang-hyun Kim and Thomas Koberda, An obstruction to embedding right-angled Artin groups in mapping class groups, *International Mathematics Research Notices* (2014) #2014 (14): 3912–3918.

8. Sang-hyun Kim and Thomas Koberda, Embedability between right-angled Artin groups, *Geometry & Topology* 17 (2013) 493–530.

7. Sang-hyun Kim and Henry Wilton, Polygonal words in free groups, *Quarterly Journal of Mathematics* (2012) 63(2), 399–421.

6. Sang-hyun Kim, Surface subgroups of graph products of groups, *International Journal of Algebra and Computation* (2012) 22 (8).

5. Sang-hyun Kim, Geometricity and polygonality in free groups, *International Journal of Algebra and Computation* 21(1–2) (2011) 235–256.

4. Sang-hyun Kim, On right-angled Artin groups without surface subgroups, *Groups, Geom. and Dyn.* 4(2) (2010) 275–307.

3. Chan-Byoung Chae, Sang-hyun Kim and Robert W. Heath Jr., Linear network coordinated beamforming for cell-boundary users, *Proc. of IEEE Workshop on Signal Processing Advances in Wireless Communications (SPAWC), June 21-24, 2009 (Perugia, Italy)* (2009).

2. Chan-Byoung Chae, Sang-hyun Kim and Robert W. Heath Jr., Network coordinated beamforming for cell-boundary users: linear and non-linear approaches, *IEEE Journal of Selected Topics in Signal Processing (J-STSP), Special Issue on Managing Complexity in Multiuser MIMO Systems*, vol. 3, no. 6 (2009) 1094–1105.

1. Sang-hyun Kim, Co-contractions of graphs and right-angled Artin groups, *Algebraic and Geometric Topology* 8 (2008) 849–868.

Accepted/submitted

Downloadable at `http://arxiv.org/a/kim_s_3`

3. Sang-hyun Kim, Thomas Koberda and Javier de la Nuez-Gonzalez. First order rigidity of homeomorphism groups of manifolds.

2. Nhat Minh Doan, Sang-hyun Kim, Mong Lung Lang, Ser Peow Tan. Optimal independent generating system for the congruence subgroups $\Gamma_0(p)$ and $\Gamma_0(pq)$.

1. Jaewon Chang, Sang-hyun Kim and Thomas Koberda. Algebraic Structure of Diffeomorphism Groups of One–Manifolds.

Notes unpublished

1. Sang-hyun Kim, Thomas Koberda and Juyoung Lee. Finite subgraphs of extension graphs.

For general public

4. Sang-hyun Kim. Scientific Walk (a series of 900-character essays in a newspaper, appearing every three weeks for June 2023 - February 2024), Joongang-ilbo.

3. Sang-hyun Kim. Turing and the Halting Problem, Horizon (a KIAS magazine, in Korean), 2021.

2. Sang-hyun Kim. Mathematics and Imagination (in Korean), Korean Educational Broadcasting System Publication, to appear. This book is based on the series of eleven TV public lectures that I gave.

1. Sang-hyun Kim. A group seen from its boundary, Horizon (a KIAS magazine, in Korean), April 2019.

Honors and Awards

The Scientist and Engineer of the Month, awarded by Korean Ministry of Science and ICT, and by National Research Foundation of Korea, July 2020.

Y-KAST Member (Young Korean Academy of Science and Technology), 2018 - 2021.

Research Excellence Award, College of Natural Sciences, Seoul National University, March 3, 2017.

Excellent Research Paper Award, Korean Mathematical Society, April 23, 2016.

For the work: (With Thomas Koberda), Embedability between right-angled Artin groups, Geometry & Topology 17 (2013) 493–530.

Teaching Excellence Award, College of Natural Sciences, Seoul National University, Sep 15 2015.

Creative Teaching Grand Award, KAIST, Feb 15, 2013.

Sang-San Prize for Young Mathematicians, Korean Mathematical Society, October 5, 2012.

R. H. Bing Fellowship, the University of Texas at Austin, 2008–2010.

Silver medal, the 34th International Mathematical Olympiad, Turkey, 1993.

Grants

Samsung Science & Technology Foundation Research Grant, 2014–2018, 2019–2023.

National Research Foundation Grant, Korean Government.

Basic Science Research Program, 2010–2013, 2013–2016.

Mid-Career Researcher Program, 2010–2013 (joint with Suhyoung Choi and Kihyoung Ko).

Mid-Career Researcher Program, 2018–2021, 2023-2027.

Professional Activities

Journals

Editor, Journal of Korean Mathematical Society, 2019 – present.

Editor, KIAS Expositions, 2020 – present.

Editor, HORIZON (KIAS webzine for general public), 2022 – present.

Reviewer, MR (Mathematical Reviews)

Reviewer, zbMATH (Zentralblatt MATH)

Services

Mentor, Vietnam Polymath REU Program, Oct 2023 - Oct 2024.

Steering Committee, AI Center for Basic Sciences, KIAS, 2020 – present.

Review Board, National Research Foundation of Korea, 2018 – present.

Research Output Analysis Committee, National Research Foundation of Korea, 2020 – 2022.

Seminars currently organized

Virtual Seminar on Geometry And Topology (visgat)   `http://visgat.cayley.kr`

    co-organizer: Hyungryul Baik (KAIST)

Geometric Group Theory in East Asia (GGTEA)   `http://ggtea.cayley.kr`

    co-organizers: Hyungryul Baik (KAIST), Ingrid Irmer(SUSTech), Hidetoshi Masai (Tokyo Tech), Yulan Qing (Fudan), Robert Tang (XJTLU), Wenyuan Yang (Peking).

Conferences organized

Steering Committee, GAGTA (Geometric and Asymptotic Group Theory with Applications, 2023 – present (annual).

Program Committee, East Asian School of Geometric Topology, 2018 – (annual).

Organizing Committee, The first Korea–Chile Workshop on Dynamical Group Theory, Incheon, Korea, Sep 27-28, 2023. `https://dgt.cayley.kr`

Organizing Committee, The 4th Korea-France Conference in Mathematics, KIAS, Seoul, Korea, August 21 - 25, 2023.

Scientific Committee, GAGTA (Geometric and Asymptotic Group Theory with Applications), Vienna, Austria, May 22 - 26, 2023.

Postech–KAIST–KIAS (PK^2) Topology Workshop, Jeju, Korea, May 29 – June 1, 2022.

Organizing / Scientific Committee, One-dimensional actions of 3-manifold groups, Dijon, France, November 4 - 8, 2019.

Organizing Committee, Combinatorial and algebraic aspects of geometric structures, Chiang Mai University, Thailand, July 18 - 26, 2019.

Scientific Committee, *yGGT-2019 (Bilbao, Spain), yGGT-2024 (Bristol, UK).*

Scientific Committee / Organizer, GAGTA-2018, Seoul, Korea, 2018.

Scientific Committee, Workshop on Groups, Geometry and Dynamical System (ICM 2018 satellite), Montevideo, Uruguay, 2018.

Organizing Committee, IBS Undergraduate Mathematics Festival, 2015.

Organizing Committee, East Asian Conference on Algebraic Topology 6 (EACAT-6), Daejeon, Korea, 2015.

Organizing Committee, Geometric Group Theory Workshop, Seaes Hotel, Jeju Island, Korea Dates January 22 - 24, 2015.

Organizing Committee, Geometry on Groups and Spaces (ICM 2014 Satellite), Daejeon, Korea, 2014

Organizing Committee, KAIST Geometric Topology Fair, 2011 - 2013 (annual).

Personal

Citizenship: Republic of Korea.

Public Service: Korean Augmentation to the US Army, December 1998 – February 2001.

Teaching Experiences

Seoul National University

Algebraic Structure of Diffeomorphism Groups (graduaute course), Spring 2018.

Dynamics on the Circle (graduate course), Spring 2016.

Geometry on Infinite Groups (graduate course), Fall 2014.

Mathematics and recitation 1, 2 (non-math majors Calculus), Spring and Fall 2014.

Calculus 1 and 2 (math majors), Spring and Fall 2015, 2018.

Topology 1, 2 (undergraduate), Spring and Fall 2015.

Mathematics for Biology 1, 2, Spring and Fall 2016.

Algebraic Topology 1, Fall 2016, 2018.

KAIST

Groups and Dynamics, Spring 2022.

Education 3.0 Calculus I, Spring 2012, Spring 2013 – a discovery oriented course with bottom-up approach and multimedia integration.

Education 3.0 Calculus II, Fall 2012.

Algebraic Topology I (graduate course), Spring 2013.

Groups, Graphs and Geometry (graduate course), Spring 2012.

Calculus II (Calculus of Several Variables), Fall 2011.

Freshman Seminar, Fall 2011.

Tufts University

Calculus II, Fall 2010.

Calculus III, Fall 2010 and Spring 2011.

the University of Texas at Austin

Differential and Integral Calculus I, Spring 2008, Fall 2008 and Fall 2009.

Differential and Integral Calculus II, Spring 2010.

Introduction to Number Theory, Summer 2009.

Probability I, Summer 2008 and Spring 2009.

Discrete Mathematics, Spring 2008.

Topics in Geometric Group Theory (graduate course), Spring 2010.

Yale University (part-time acting instructor)

Calculus of Functions of One Variable, 2006 and 2007.

Introduction to Functions of Several Variables, 2006.

Calculus of Functions of Several Variables, 2001, 2002, 2003, 2004, 2005 and 2006.

Invited Talks

1. The 4th Korea-France Conference in Mathematics, August 21 - 25, 2023, KIAS, Korea.

2. Teichmüller Theory: Classical, Higher, Super and Quantum, Mathematisches Forschungsinstitut Oberwolfach, Germany, July 30 - Aug 4, 2023. Title: Optimal independent system for Gamma0(p) and Gamma0(pq).

3. Characters and Moduli of Surfaces (SerFest), The Research Institute for Mathematical Sciences (RIMS), Kyoto, Japan, July 19 - 21, 2023.

4. The Mathematical Society of Japan -- Seasonal Institute (MSJ-SI), New aspects of Teichmüller theory, University of Tokyo, Japan, July 9 - 15, 2023.

5. Korea Foundation for the Advancement Science & Creativity, International Olympiad Team Ceremony, June 14, 2023

6. NCTS 2023 dynamics workshop (minicourse of 3 talks), National Center for Theoretical Sciences (NCTS), National Taiwan University, Taiwan, June 8-10, 2023.

7. Topology Seminar, Gakushuin University, May 26, 2023.

8. Special Session on Geometric Structures and Representation Spaces, Korean Mathematical Society, April 28, 2023.

9. Topology seminar, Seoul National University, April 21, 2023.

10. The 3rd Probabilistic Methods in Negative Curvature workshop (minicourse of 4 talks), ICTS Bangalore, India, February 27 -- March 10, 2023 (mini-course).

11. Conformal dynamics and groups, BICMR, December 2, 2022 (online).

12. The Pacific Rim Mathematical Association Congress 2022 (PRIMA CONGRESS 2022), Vancouver, Canada, Special Session on ``Geometric Group Theory'', December 2022.

13. School on Dynamical Group Theory, Dijon, France, Oct 3 - 7, 2022 (mini-course of 3 talks).

14. Mathematics Department Colloquium, Sookmyung Women's University, September 15, 2022.

15. REU Colloquium, University of Virginia, July 27, 2022 (US EST) / July 28, 2022 (KST) : online.

16. Topology and Geometry Seminar, National University of Singapore, July 4, 2022.

17. Regular Workshop, Integrative Research Institute in Basic Science, Soongsil University, June 24, 2022.

18. Geometry and Analysis on Groups Research Seminar, University of Vienna, June 7, 2022.

19. OpenKIAS Public Lecture, Korean Mathematical Society, April 28, 2022 (5pm), hybrid.

20. Sydney Mathematical Research Institute (SMRI) Algebra and Geometry Online seminar, March 2nd, 2022 (Wed, 11 am KST/ 1 pm Australia).

21. Samsung Sciences & Technology Foundation Annual Forum, November 22, 2021.

22. Geometry and Topology Online, Warwick Mathematics Institute, November 18, 2021 (online).

23. Symmetry in Newcastle (seminar), The University of Newcastle, Australia, November 1, 2021 (online).

24. Graduate seminar on mathematical challenges, Yonsei University, October 6, 2021.

25. VI Congreso Latinoamericano de Matemáticos (CLAM) 2021, Montevideo, Uruguay, September 14, 2021 (online).

26. REU Colloquium, University of Virginia, July 21, 2021 (online).

27. Mathematical Sciences Department colloquium, Seoul National University, May 6, 2021. "On Circle Diffeomorphism Groups".

28. The 16th East Asian Conference on Geometric Topology, University of Tokyo, Japan, January 25, 2021.

29. Teichmüller Theory: Classical, Higher, Super and Quantum, CIRM, Luminy, France, October 5 - 9, 2020.

30. REU Colloquium, University of Virginia, June 24, 2020.

31. Colloquium at Electrical Engineering School, DGIST, Korea, June 2, 2020.

32. Hyperbolic Lunch, University of Toronto, May 13, 2020.

33. Virtual Seminar on Geometry and Topology (visgat), KIAS and KAIST, March 31, 2020.

34. Topology Seminar, Gakushuin University, December 2, 2019.

35. Mathematics Colloquium, KAIST, November 21, 2019.

36. Mathematics Colloquium, Korea University, November 15, 2019.

37. Arbeitsgemeinschaft: Zimmer's Conjecture, Mathematisches Forschungsinstitut Oberwolfach, Germany, 13 -- 18 October, 2019. Title: Property T and actions on S^1.

38. Geometry and Analysis on Groups Seminar, University of Vienna, Austria, October 8, 2019.

39. Summer School on Geometric Topology and Algebraic Geometry, KAIST, Korea, August 12 an 13, 2019.

40. Combinatorial and algebraic aspects of geometric structures – Workshop in Thailand, with the cooperation of Luxembourg, Singapore, and Thailand, Chiang Mai, Thailand, July 18 and 19, 2019.

41. Ordered Groups and Rigidity in Dynamics and Topology, Oaxaca, Mexico, June 17, 2019.

42. Undergraduate seminar, Kwangwoon University, June 7, 2019.

43. International Conference Complex Analysis, Partial Differential Equations And Their Applications, Hanoi, Vietnam, June 5, 2019. *My talk was on June 5, but it did not appear in the webpage for some reason.

44. Ergodic and Geometric Group (EGG) Theory seminar, EPFL, Lausanne, Swiss, May 27, 2019.

45. Non-positive curvature, Warsaw, Poland, May 20, 2019.

46. Geometry and Analysis on Groups Seminar, University of Vienna, Austria, May 16, 2019.

47. Special Sessions on Mapping Class Groups, University of Hawaii at Manoa, Honolulu, US, March 23, 2019.

48. East Asian Conference of Geometric Topology, Beijing, China, January 23, 2019.

49. Suzhou 2019 Workshop on Geometry Topology, Soochow University, Suzhou, China, January 18, 2019.

50. Boundaries of topological groups, C*-algebras, symmetric spaces, and Lyapounov exponents, TSIMF, Sanya, China, December 20, 2018.

51. One-day Workshop about Dynamics, Geometry and Groups, Suwon, Korea, December 5, 2018.

52. KIAS Analysis Seminar, Seoul, Korea, November 1, 2018.

53. New Trends in Teichmüller Theory and Mapping Class Groups, Mathematisches Forschungsinstitut Oberwolfach, Germany, September 2--8, 2018.

54. Department Seminar, Chiang Mai University, Thailand, August 24, 2018.

55. International Conference on Dynamical Systems, Sustech, China, June 25--28, 2018. Slide (PDF)

56. Hyperbolic 3-manifolds and related topics, Postech, Korea, June 18-- 22, 2018.

57. Silk Road Geometry Conference, Gokova Geometry/Topology Institute (GGTI), Turkey, June 4 - 8, 2018.

58. Topology in Australia and South Korea, IBS-CGP, Korea, April 25--27, 2018.

59. KIAS (Korea Institute for Advanced Study), Korea, April 17, 2018.

60. Topology Seminar, KAIST, Korea, March 27, 2018.

61. Branched Coverings, Degenerations, and Related Topics 2018 (minicourse), Hiroshima University, Japan, March 5 - 9, 2018.

62. Structure of 3-manifold Groups, CIRM (Luminy), France, February 26 - March 2, 2018.

63. Workshop on Geometric Group Theory (minicourse), BICMR, Beijing University, December 16 - 17, 2017.

64. Kyoto University, December 12, 2017.

65. Low-dimensional topology seminar, Osaka University, December 5, 2017.

66. Topology Seminar, University of Tokyo, November 28, 2017.

67. Max Dehn Seminar, University of Utah, October 25, 2017.

68. Topology Seminar, Rice University, October 23, 2017.

69. Topology Seminar, University of Texas at Austin, October 20, 2017.

70. Colloquium, University of Virginia, October 12, 2017.

71. Geometric Group Theory and Topology Seminar, Tufts University, October 3, 2017.

72. Geometry and Topology Seminar, Brown University, September 29, 2017.

73. GGT Seminar, MgGill University, September 27, 2017.

74. Japan Conference on Discrete and Computational Geometry, Graphs, and Games: JCDCG3, Tokyo University of Science (Aug 29 - Sep 1), Tokyo, Japan, August 29, 2017.

75. Japanese Topology Symposium, Tokai University, Tokyo, Japan, August 21 -- 24, 2017, 2017.

76. Invited talk, Korea Institute for Advanced Study (KIAS), Korea, Aug 7, 2017.

77. GAGTA 2017: Geometric and Asymptotic Group Theory with Applications (July 3 -- 7), Bilbao, Spain, July 4, 2017.

78. SFB Seminar, Universität Regensburg, Germany, June 30, 2017.

79. Séminaire Géométrie, Dynamique et Topologie (GDT), L'Institut de Mathématiques de Marseille (I2M), France, May 22, 2017.

80. Geometry Seminar, ETH Zürich, Swiss, May 3, 2017.

81. Ergodic and Geometric Group (EGG) Theory seminar, EPFL, Lausanne, Swiss, April 27, 2017.

82. Thursday Colloquium, TIFR, Mumbai, India, April 20, 2017.

83. IBS--CGP Seminar, Pohang, Korea, April 13, 2017.

84. Department Colloquium, Sungkyunkwan University, Suwon, Korea, April 6, 2017.

85. Topology--Geometry Seminar, Hiroshima University, Japan, March 16, 2017.

86. Topology Seminar, Osaka University, Japan, March 13, 2017.

87. SNU Geometry and Topology Mini-Workshop, Seoul National University, Korea, February 17, 2017.

88. SNU Topology Winter School, December 16,, 2016.

89. Virginia Topology Conference, University of Virginia, November 18, 2016.

90. Geometry and Topology Seminar, Seoul National University, November 16, 2016.

91. Topology Seminar, Sungkyunkwan University, November 15, 2016.

92. Invited Talk, Korean Mathematical Society Annual Fall Conference, October 22, 2016.

93. Workshop on Moduli Spaces of Geometric Structures, a part of the summer-long program Geometry, Topology and Dynamics of Moduli Spaces, National University of Singapore, August 17, 2016.

94. Geometric Topology Fair 2016, KAIST, Daejeon, July 7, 2016.

95. GAGTA (Geometric and Asymptotic Group Theory and Applications) 2016, Stevens Institute of Technology, June 17, 2016.

96. IBS--CGP seminar, IBS--CGP, Pohang, Korea, April 21, 2016.

97. Mathematics seminar, Konkuk University, Seoul, Korea, March 25, 2016.

98. Invited lecture, Korea Institute for Advanced Study (KIAS), Korea, Mar 2, 2016.

99. Group actions seminar, Yale University, Feb 22, 2016.

100. Geometry and topology seminar, Univ. of Massachusetts at Amherst, Feb 19, 2016.

101. Geometric group theory seminar, Tufts University, Feb 18, 2016.

102. Teichmüller theory and low-dimensional topology, Tsinghua Sanya International Mathematics Forum (TSIMF), China, Jan 11 - 15, 2016. script

103. East Asian Conference on Algebraic Topology 6 (EACAT-6), Daejeon, November 30 - Dec 4, 2015.

104. 2015 International Workshop on Mathematical Sciences in Dalian, China, Oct 30 - Nov 1, 2015.

105. Department Colloquium, Ewha Women's University, Oct 15, 2015.

106. University of Rennes, France, October 1, 2015.

107. IBS--CGP Mathematics Festival for Undergraduates, Aug 17 - 21, 2015. script

108. Dubrovnik VIII - Geometric Topology, Geometric Group Theory and Dynamical Systems, Croatia, June 22 - 26, 2015.

109. Statistics seminar, Seoul National University, Korea, June 4, 2015.

110. Geometry & Topology seminar, Postech, Korea, April 22, 2015.

111. Geometric Group Theory on Gulf Coast (G^3), San Padres Island, USA, March 26 - 29, 2015.

112. KIAS Algebra Seminar, KIAS, January 5, 2015.

113. Group Action Forum, Tsinghua Sanya International Mathematics Forum, China, December 15 -- 19, 2014.

114. KIAS/CMC Colloquium, KIAS, December 2, 2014.

115. Department Colloquium, Chiang Mai University, October 28, 2014.

116. the 7th Mathematical Society of Japan -- Seasonal Institute (MSJ-SI), Hyperbolic Geometry and Geometric Group Theory (ICM Satellite), University of Tokyo, Japan, July 30 - August 5, 2014. script

117. Discrete Groups and Geometric Structures with Applications V, KU Leuven, Belgium, June 2 - 6, 2014.

118. Branched Coverings, Degenerations, and Related Topics 2014, Hiroshima University, Japan, March 7, 2014.

119. Groups and Geometry in the South East, Mathematics Institute, Warwick University, United Kingdom, February 21, 2014.

120. Complex Analysis and Topology of Discrete Groups and Hyperbolic Spaces, Research Institute for Mathematical Sciences, Kyoto University, Japan, January 24, 2014.

121. 5th East Asian Conference of Algebraic Topology (EACAT 5), Chinese Academy of Sciences, Beijing, China, December 3, 2013.

122. Wasatch Topology Conference, the University of Utah, USA, November 16, 2013.

123. Topology Seminar, University of Texas at Austin, November 11, 2013.

124. Geometry and Topology Seminar, City University of New York, November 5, 2013.

125. Discovery-oriented class in calculus, Inha University Pedagogy Workshop, October 28, 2013. script

126. Korean Mathematical Society Annual Meeting, University of Seoul, Korea, October 25, 2013.

127. Geometry and Topology Seminar, Brown University, October 9, 2013.

128. Topology/Geometry Seminar, Yale University, October 8, 2013.

129. New York Applied Algebra Colloquium, City University of New York, 27 September, 2013.

130. Geometric and Analytic Group Theory, Ventotene Island, Italy, September 9-14, 2013.

131. Geometric Structures on Low-Dimensional Manifolds, Korea Institute for Advanced Study, Korea, May 24, 2013.

132. Discrete Math Seminar, KAIST, April 19, 2013.

133. Hot Topics: Surface subgroups and cube complexes, Mathematical Sciences Research Institute, USA, March 19, 2013.

134. Topology and Geometry Seminar, National University of Singapore, February 13, 2013.

135. Geometric Group Theory and Topology Seminar, Tufts University, January 29, 2013.

136. Topology/Geometry Seminar, Yale University, January 22, 2013.

137. Manhattan Algebra Day, Stevens Institute, USA, December 7, 2012.

138. Topology Seminar, Osaka University, December 4 2012.

139. Friday Workshop on Geometry of Artin Groups, KIAS, November 23, 2012.

140. Topology Seminar, Hanyang University, October 19 and October 26, 2012.

141. Department Colloquium, Sogang University, October 18 2012.

142. MSJ-KMS Joint Meeting, Kyushu University, Japan, September 17, 2012. script

143. Topology Seminar, KAIST, September 5 2012.

144. The 10th KAIST Geometric Topology Fair, KAIST, Daejeon, Korea, August 16, 2012.

145. Geometric and Asymptotic Group Theory with Applications (GAGTA-6), University of Duesseldorf, July 30, 2012.

146. Geometric Group Theory - Kyoto 2012, Kyoto University, Japan, June 7, 2012.

147. Department Colloquium, Ulsan University, April 12 2012.

148. Workshop on Immersed surfaces in 3-manifolds, a part of the IHP program "Geometry and analysis of surface group representations", IHP, Paris, March 26, 2012. script

149. Geometry and Topology Seminar, SUNY Buffalo, January 25, 2012.

150. AMS-MAA Joint Meeting, Special session on hyperbolicity in manifolds and groups, Boston, January 4, 2012.

151. Department Colloquium, Konkuk University, Seoul, Korea, November 17, 2011.

152. Department Colloquium, Hanyang University, Seoul, Korea, November 4, 2011.

153. Department Colloquium, Yonsei University, Seoul, Korea, October 13, 2011.

154. Department Colloquium, Seoul National University, Seoul, Korea, September 29, 2011.

155. The 4th Topology Workshop, Chonbuk National University, Jeonju, Korea, August 23 - 24, 2011.

156. The 9th KAIST Geometric Topology Fair, KAIST, Daejeon, Korea, August 9, 2011.

157. Geometric and Asymptotic Group Theory with Applications (GAGTA--5), Universitat Politecnica de Catalunya, Barcelona, Spain, July 12, 2011.

158. Dubrovnik VII - Geometric Topology, Inter-University Centre and University of Zagreb, Dubrovnik, Croatia, July 2, 2011.

159. Geometry/Topology Seminar, University of Chicago, April 12, 2011.

160. Topology/Geometry Seminar, Yale University, April 5, 2011.

161. Spring Topology and Dynamics Conference, University of Texas at Tyler, U.S.A., March 18, 2011.

162. AMS Southeastern Section Meeting, Special Session on Geometric Group Theory, Georgia Southern University, U.S.A., March 13, 2011.

163. Topology and Geometric Group Theory Seminar, Cornell University, March 8, 2011.

164. Bernstein Seminar, Cornell University, March 8, 2011.

165. AMS-MAA Joint Meeting, Special session on groups, geometry and applications, New Orleans, January 7, 2011.

166. Topology Seminar, KAIST, Korea, December 23, 2010.

167. Geometry and Topology Seminar, SUNY Buffalo, November 19, 2010.

168. Topology Seminar, University of Texas at Austin, November 8, 2010.

169. Geometry and Topology Seminar, Caltech, October 22, 2010.

170. Approaches to Group Theory, Using Algebraic, Analytic, and Geometric Tools in the Study of Groups, Cornell University, U.S.A., October 10, 2010.

171. Topology Seminar, Brandeis University, September 21 2010.

172. Geometric Group Theory and Topology Seminar, Tufts University, September 14, 2010.

173. KAIST Topology Workshop, Daejeon, Korea, August 4, 2010.

174. KAIST--POSTECH--SNU YB Workshop, Jeonju, Korea, July 3, 2010.

175. Topology Seminar, University of California at Santa Barbara, May 18, 2010.

176. AMS Special Session on Geometric Group Theory, University of New Mexico, U.S.A., April 18 2010.

177. Geometric Group Theory Seminar, Tufts University, January 19, 2010.

178. BK21 Seminar, KAIST, January 26 2010.

179. Joint Topology and Discrete Math Seminar, KAIST, December 28, 2009.

180. Topology Seminar, Konkuk University, December 22, 2009.

181. Joint Meeting of Korean Mathematical Society and American Mathematical Society, Special Session on Geometric Structures and Geometric Group Theory, Ewha Womans University, Korea, December 18, 2009.

182. Topology/Geometry Seminar, Yale University, October 27, 2009.

183. Topology Seminar, The University of Texas at Austin, August 31, 2009.

184. International Conference on Geometric and Combinatorial Methods in Group Theory and Semigroup Theory, the University of Nebraska-Lincoln, U.S.A., May 20, 2009.

185. AMS Special Session on Recent Progress in Geometric Group Theory, San Francisco State University, April 25, 2009.

186. Topology Seminar, The University of Texas at Austin, April 13, 2009.

187. Groups and Dynamics Seminar, Texas A&M University, March 25, 2009.

188. Topology Seminar, The University of Texas at Austin, October 27, 2008. script

189. Groups and Infinite Graphs, Erwin Schroedinger International Institute, Austria, August 26, 2008.

190. Topology Seminar, Seoul National University, Korea, June 2, 2008.

191. Topology Seminar, The University of Texas at Austin, January 28, 2008. script

192. Joint Postdoc Seminar, Mathematics Sciences Research Institute, October 19 2007.

193. Group Actions Seminar, Yale University, October 16, 2006.

Public Lectures

1.   Future intelligence (forum), CHUNG MONG-KOO Foundation and Chosun Ilbo, February 17, 2022.

2.   Fascinated by Mathematics. A series of the following eleven TV lectures on various mathematical topics for a general audience. Produced by Korean Educational Broadcasting System. August 19 - September 2, 2020.

   Introducing Primes
   Counting Infinities
   On the Square Packing Game : Irrational Numbers
   On the Circle Packing Game : Rational Numbers
   Gödel's Incompleteness Theorem (I)
   Gödel's Incompleteness Theorem (II)
   On Probabilities
   On Symmetries
   The Three Impossible Constructions
   Non-Euclidean Geometry
   The Shape of the Universe

3.   Public lecture, Yeongnam High School, Daegu, Korea, April 3, 2019.

4.   Public lecture at Mathematics Culture Festival, Gwachun National Science Museum, Korea, April 27, 2019.

5.   Science Camp, College of Natural Sciences, Seoul National University, (1) August 3, 2016 (2) August 9, 2018

6.   Talk concert (for general public), Gwachun National Science Museum, Korea, Aug 19, 2017.

7.   Young Mathematicians' Camp, National Institute for Mathematical Sciences, Daejeon, February 22, 2017.

8.   College of Natural Sciences Public Lecture, Seoul National University, Korea, February 9, 2017. [youtube]

9.   Saturday Public Science Lectures, College of Natural Sciences, Seoul National University, March 26, 2016.

10. Saturday Public Science Lecture, College of Natural Sciences, Seoul National University, Oct 24, 2015.

11. Dream Lecture Series by Korea Foundation for Advanced Studies

12. 2018 May 12 (KFAS building), May 14 (Hanyoung Foreign Language High School)

13. 2017 March 20, 2017 (Young-rak High School), July 15, 2017 (KFAS building).
14. 2016 July 23, July 30 (KFAS building), Seoul High School, October 14.
15. 2015 Kyungshin High School - May 8. Seocho High School - May 29. Seo-oon Middle School - Sep 4. Chil-won High School - Oct 16.
16. 2014 Sep 13, 2014 (Banpo High School). Dec 20, 2014, KFAS.