Sang-hyun Kim

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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.

- **Chair**, School of Mathematics, KIAS, July 2024 – present.

- **Affiliate 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

1. Inhyeok Choi, Sang-hyun Kim, Smoothing countable group actions on metrizable spaces, to appear in Advanced Studies in Pure Mathematics (Proceedings of Mathematical Society of Japan - Seasonal Institute).

2. Sang-hyun Kim, Nicolás Matte Bon, Mikael de la Salle and Michele Triestino, Subexponential growth and C^1 actions on one-manifolds, International Mathematics Research Notices, Volume 2025, Issue 13, July 2025, rnaf202.

3. Sang-hyun Kim, Thomas Koberda and Javier de la Nuez-Gonzalez. First order rigidity of homeomorphism groups of manifolds, Comm. Amer. Math. Soc. 5 (2025), 144-194.

4. Nhat Minh Doan, Sang-hyun Kim, Mong Lung Lang, Ser Peow Tan. Optimal independent generating system for the congruence subgroups $\Gamma_0(p)$ and $\Gamma_0(pq)$, The Journal of Geometric Analysis (2025) 35:216

5. Sang-hyun Kim and Thomas Koberda. Non-freeness of groups generated by two parabolic elements with small rational parameters. Michigan Mathematical Journal (2022).

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

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

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

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

10. 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).

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

12. Christian 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.

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

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

15. 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.

16. 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.

17. 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. Sang-hyun Kim. Surface subgroups of word-hyperbolic groups (survey), Handbook of group actions. Vol. III, 89-102.

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

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

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

22. 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.

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

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

25. Sang-hyun Kim and Thomas Koberda. The geometry of the curve complex of a right-angled Artin group, International Journal of Algebra and Computation (2014) 24 (2) 121-169.

26. 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.

27. 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.

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

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

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

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

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

33. 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) (2009).

34. 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), vol. 3, no. 6 (2009) 1094–1105.

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

Accepted/Submitted

1. TBA on Samurai (2026).

2. Aletheia tackles FirstProof autonomously (2026).

3. Towards Autonomous Mathematics Research (2026).

4. Semi-Autonomous Mathematics Discovery with Gemini: A Case Study on the Erdős Problems (2026).

5. Irrationality of rapidly converging series: a problem of Erdős and Graham (2026).

6. Elementary equivalence and diffeomorphism groups of smooth manifolds (2025).

7. Jaewon Chang, Sang-hyun Kim and Thomas Koberda. Algebraic Structure of Diffeomorphism Groups of One-Manifolds, accepted, Panoramas et synthèses - Société mathématique de France.

Notes unpublished

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

2. The Arens space S_2 is a paracomplex: A note on Nagata's Problem 3.

For general public

1. Sang-hyun Kim. Scientific Walks, Joongang-ilbo, June 2023 - June 2025: a newspaper column series appearing every three weeks.

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

3. Sang-hyun Kim. Mathematics and Imagination (in Korean), Korean Educational Broadcasting System Publication, 2022: a book based on the series of eleven TV public lectures.

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

Honors and Awards

- The Choi Seok-jeong Award, by the Korean Ministry of Science and ICT, November 2023.

- The Scientist and Engineer of the Month, by the Korean Ministry of Science and ICT, July 2020.

- Y-KAST Member, by the Korean Academy of Science and Technology (KAST), 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.

- 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

- Principal Investigator (single), Samsung Science & Technology Foundation Research Grant, 2014 – 2018, 2019 – 2023.

- Principal Investigator (single), Basic Science Research Program, NRF, 2010 – 2013, 2013 – 2016.

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

- Principal Investigator (single), Mid-Career Researcher Program, NRF, 2018 – 2021 and 2023 – 2028.

Professional Activities

Journals

- Editor, KIAS-Springer Series in Mathematics, 2020 – present.

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

- Editor, HORIZON (KIAS webzine for general public), 2022 – 2025.

- Reviewer, MR (Mathematical Reviews) and zbMATH.

Services (recent)

- KIAS PR Committee, 2025 – present.

- KIAS Transdisciplinary Research, Program Committee, 2023 – present.

- Chair, School of Mathematics, KIAS, 2024 – present.

- Mentor, Vietnam Polymath REU, 2023 – 2024.

- Section Committee (Topology), Korean Mathematical Society, 2023 – present.

- Review Board, National Research Foundation of Korea, 2018 – 2022.

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

- Steering Committee, Seoul Science High School, 2018 – 2020.

- Executive board member, Korean Mathematical Society, 2013 – 2014.

Seminars currently organized

- Virtual Seminar on Geometry And Topology (visgat)

- Geometric Group Theory in East Asia (GGTEA)

Conferences organized / Committees

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

- East Asian School of Geometric Topology (EACGT), annual. Program Committee (2018-present).

- Young Geometric Group Theory (yGGT) XIV, KIAS, June 8-12 2026.

- Organizer, Dynamical Group Theory series (I through VIII, 2023-2026).

- Mapping Class Groups @KIAS, October 13-17, 2025.

- Current Challenges in Mathematics, August 25-29, 2025.

- 2K-Gate I, June 10-13, 2025.

- Organizer, Korean Mathematical Society Fall Meeting, Topology I Session, Oct 22-23, 2025.

- Organizer, KIAS Graduate Student Meeting in Pure Mathematics, October 21st, 2024.

- Organizer, Hyperbolic Geometry of Numbers, Dec 18 - 20, 2023.

Teaching Experiences

Seoul National University: Algebraic Structure of Diffeomorphism Groups (Spring 2018), Dynamics on the Circle (Spring 2016), Geometry on Infinite Groups (Fall 2014), Calculus 1 and 2 (Spring/Fall 2015, 2018), Topology 1, 2 (Spring/Fall 2015), Mathematics for Biology 1, 2 (Spring/Fall 2016), Algebraic Topology 1 (Fall 2016, 2018).
KAIST: Groups and Dynamics (Spring 2022), Education 3.0 Calculus I (Spring 2012, 2013), Education 3.0 Calculus II (Fall 2012), Algebraic Topology I (Spring 2013), Groups, Graphs and Geometry (Spring 2012), Calculus II (Fall 2011), Freshman Seminar (Fall 2011).
Tufts University: Calculus II (Fall 2010), Calculus III (Fall 2010, Spring 2011).
University of Texas at Austin: Differential and Integral Calculus I (Spring 2008, Fall 2008, 2009), Differential and Integral Calculus II (Spring 2010), Introduction to Number Theory (Summer 2009), Probability I (Summer 2008, Spring 2009), Discrete Math (Spring 2008), Topics in Geometric Group Theory (Spring 2010).
Yale University: Calculus of Functions of One Variable (2006, 2007), Introduction to Functions of Several Variables (2006), Calculus of Functions of Several Variables (2001-2006).

Talks

1. New Developments of Teichmller Theory (Oberwolfach Workshop), September 28 - Oct 2, 2026.

2. Busan Mathematics Culture Center, July 10, 2026.

3. Kangwon Cultural Education Center, May 6, 2026.

4. CRUNCH seminar, April 24, 2026.

5. Daegu Gosan Library, April 10, 2026.

6. Current Challenges in Topology, Milan, Italy, May 20 - 24, 2026.

7. EBS, March 18, 2026.

8. IMU-KIAS Colloquia, hosted with the IMU Executive Committee, KIAS, March 11 - 13, 2026.

9. Military TV, March 11, 2026.

10. Career Lecture at the Graduation Ceremony, the Gifted Education Center, the Chungcheongbuk-do Institute of Science Education, October 18, 2025.

11. The 6th Workshop on Geometry and Topology around Young-Nam, September 26 - 27, 2025.

12. Hyundai Motor Group, August 13, 19, 26, 2025.

13. Topology seminar, National University of Singapore, July 30, 2025.

14. Non-positive curvature and applications, Isaac Newton Institute, July 7 - 11, 2025.

15. Daejeon Institute of Education Information, June 26, 2025. (public math, "human, mathematics and computer")

16. Geometric Group Theory and Related Topics, June 16 - 20, 2025, BICMR. [Link]

17. Mathematics Colloquium, April 16 (Wed), 2025, Kyungpook National University

18. East Asian Conference on Geometric Topology 20, Tokyo, Japan, February 4, 2025.

19. Friday Seminar on Knot Theory, OCAMI, Osaka, Japan, January 31, 2025.

20. What is...? (on rotation number), Osaka University, Japan, January 30, 2025.

21. 2025 KMS-VMS Joint Workshop, Hanoi, Vietnam, January 6 - 10, 2025.

22. Geometry and Dynamics in Low-Dimensions, Hanoi, Vietnam, Janury 6 - 10, 2025.

23. On Dream Young Mathematicians Camp (for high school students), January 5, 2025.

24. Topology Seminar, National University of Singapore, December 26, 2024.

25. Foliations and Diffeomorphism Groups, CIRM, Marseille, December 9 - 13, 2024.

26. Dynamical Group Theory V (KOREA: KIAS workshop on One RElator groups and other Aspects of GGT), September 27, 2024. [Link]

27. KAIST, Basic Science Week, October 30, 2024.

28. Davinci Motel by Hyundai Card, Seoul, September 28, 2024. (public math, invitation- only meeting)

29. Dynamical Group Theory IV (KIAS-Rice Workshop), September 27, 2024. [Link]

30. Public Lecture, Huh June Center for Mathematical Challenges, September 7, 2024. [Link]

31. Colloquium, Huh June Center for Mathematical Challenges, September 5, 2024.

32. Public Lecture organized by Korea Academy of Science and Technology (KAST), Seoul Science High School, August 19, 2024.

33. Panel Discussion, World Congress of Korean and Korean-Ethnic Scientists and Engineers, Seoul, July 11, 2024.

34. KFAS Summer 2024, Gangneung, Korea, July 4 - 6, 2024.

35. KAOS Science, "100 years of geometric topology and the Poincar conjecture", July 3, 2024 [Stream Link] (recording: June 17)

36. REU Colloquium, University of Virginia, June 19, 2024 (8 PM, US EST) / June 20, 2024 (9 AM, KST) : online.

37. Computational aspects of thin groups, Institute for Mathematical Sciences National University of Singapore, June 11, 2024.

38. An-ahm Lecture, Korea University, May 20, 2024

39. Low Dimensional Actions, IHP (Institute Henri Poincar), Paris, April 29 - May 3,

Link

40. Oberseminar Differentialgeometrie, Max Planck Institute for Mathematics, April 25,

Link

41. Special Session on Geometric Structures and Representation Spaces, Korean Mathematical Society , KAIST, Daejeon, April 20, 2024.

42. Colloquium, KRIMS, Kangwon University, April 17, 2024.

43. Math Colloquium, Postech, Pohang, March 22, 2024. [Link]

44. The 19th East Asian Conference of Geometric Topology, Kyoto, Japan, February 19 - 23, 2024.

45. KAIST Geometric Topology Fair 2024, Busan, Jan 15 - 19, 2024

46. Round table discussion on publicizing science culture, Ministry of Science and ICT, Korea, January 10, 2024, [news]

47. "What is a good mathematical research?", The Third Round Table – Mathematics for Tomorrow, old and new", The Korean Federation of Science and Technology Societies (KOFST), Korea, December 20, 2023 [YouTube]

48. Department Colloquium, Yonsei University, Seoul, Korea, November 9, 2023 (5 pm).

49. Dream Lecture Series by Korea Foundation for Advanced Studies, West Daejeon Highschool, Oct 18, 2023.

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

51. Teichmller 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).

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

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

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

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

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

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

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

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

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

61. The Pacific Rim Mathematical Association Congress 2022 (PRIMA CONGRESS 2022), Vancouver, Canada, Special Session on "Geometric Group Theory", December 2022 (TBD).

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

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

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

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

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

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

68.

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

70. " (The landscape of a space), KIAS Public Lecture, Korean Mathematical Society Spring Meeting, April 28, 2022. [Youtube]

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

72. Future intelligence (forum), CHUNG MONG-KOO Foundation and Chosun Ilbo, February 17, 2022. [youtube] [youtube (sketch)] [news article]

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

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

75. Human, Mathematics, Computer (On the Halting problem of Turing), KFAS building, Dream Lecture Series by Korea Foundation for Advanced Studies, November 13,

76.

77. Symmetry in Newcastle (seminar), The University of Newcastle, Australia, November 1, 2021 (online). [youtube]

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

79. VI Congreso Latinoamericano de Matemticos (CLAM) 2021, Montevideo, Uruguay, September 14, 2021 (online).

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

81. Mathematical Sciences Department colloquium, Seoul National University, May 6,

82. "On Circle Diffeomorphism Groups" (online).

83. The 16th East Asian Conference on Geometric Topology, University of Tokyo, Japan, January 25, 2021. (online, invited talk)

84. OpenKIAS public lecture - (, , ,), December 22, 2020. [Youtube]

85. Expanding Dynamics, CMM - Center for Mathematical Modeling / Universidad de Chile, October 13, 2020. (online)

86. Teichmller Theory: Classical, Higher, Super and Quantum, CIRM, Luminy, France, October 8, 2020. (online)

87. The 3rd International Undergraduate Mathematics Summer School, Seoul National University,TBD, 5 lectures, postponed.

88. Mathematics Colloquium, Seoul National University, Korea, TBD. Groups of circle diffeomorphisms: analysis, dynamics and algebra, postponed.

89. (Fascinated by Mathematics), a series of 11 lectures on various subjects, EBS2 channel (Korean Educational Broadcasting System), August 19 - September 2, 2020. lecture 1 (youtube) complete lectures

90. REU Colloquium, University of Virginia, June 24, 2020 (online).

91. Colloquium at Electrical Engineering School, DGIST, Korea, June 2, 2020 (online).

92. Hyperbolic Lunch, University of Toronto, May 13, 2020. (online)

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

94. (online)

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

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

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

98. Arbeitsgemeinschaft: Zimmer's Conjecture, Mathematisches Forschungsinstitut Oberwolfach, Germany, 13 – 18 October, 2019. Title: Property T and actions on SÎ.

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

100.

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

102. 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.

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

104.

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

106. 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.

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

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

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

110.

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

112. Public lecture (organized by The Korean Academy of Science and Technology), Yeongnam High School, Daegu, Korea, April 3, 2019.

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

114. The 14th East Asian Conference of Geometric Topology, Beijing, China, January 23,

115. (plenary)

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

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

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

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

120. New Trends in Teichmller Theory and Mapping Class Groups, Mathematisches Forschungsinstitut Oberwolfach, Germany, September 2–8, 2018.

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

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

123.

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

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

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

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

128. Dream Lecture Series by Korea Foundation for Advanced Studies, Hanyoung Foreign Language High School, May 14, 2018.

129. Dream Lecture Series by Korea Foundation for Advanced Studies, KFAS building, May 12, 2018.

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

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

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

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

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

135.

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

137. Kyoto University, December 12, 2017.

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

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

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

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

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

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

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

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

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

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

148.

149. Japanese Topology Symposium, Tokai University, Tokyo, Japan, August 21 – 24, 2017, 2017.

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

151. Dream Lecture Series by Korea Foundation for Advanced Studies, KFAS building, July 15, 2017.

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

153. SFB Seminar, Universitt Regensburg, Germany, June 30, 2017.

154. Sminaire Gomtrie, Dynamique et Topologie (GDT), LInstitut de Mathmatiques de Marseille (I2M), France, May 22, 2017.

155. Geometry Seminar, ETH Zrich, Swiss, May 3, 2017.

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

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

158. IBS–CGP Seminar, Pohang, Korea, April 13, 2017.

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

160. Dream Lecture Series by Korea Foundation for Advanced Studies, Young-rak High School, March 20, 2017.

161. Topology–Geometry Seminar, Hiroshima University, Japan, March 16, 2017.

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

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

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

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

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

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

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

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

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

171. Dream Lecture Series by Korea Foundation for Advanced Studies, Seoul High School, October 14, 2016.

172. 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.

173. Dream Lecture Series by Korea Foundation for Advanced Studies, KFAS building, July 23, and July 30, 2016.

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

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

176. IBS–CGP seminar, IBS–CGP, Pohang, Korea, April 21, 2016.

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

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

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

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

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

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

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

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

185. 2015 International Workshop on Mathematical Sciences in Dalian, China, Oct 30 - Nov 1, 2015.

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

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

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

189. Dream Lecture Series by Korea Foundation for Advanced Studies, Chil-won High School - October 16, 2015.

190. Dream Lecture Series by Korea Foundation for Advanced Studies, Seo-oon Middle School - September 4, 2015.

191. IBS–CGP Mathematics Festival for Undergraduates, Aug 17 - 21, 2015.

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

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

194. Dream Lecture Series by Korea Foundation for Advanced Studies, Seocho High School - May 29, 2015.

195. Dream Lecture Series by Korea Foundation for Advanced Studies, Kyungshin High School - May 8, 2015.

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

197. Geometric Group Theory on Gulf Coast (G$\hat{3}$), San Padres Island, USA, March 26 - 29, 2015.

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

199. Dream Lecture Series by Korea Foundation for Advanced Studies, KFAS building, December 20, 2014.

200. Group Action Forum, Tsinghua Sanya International Mathematics Forum, China, December 15 – 19, 2014.

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

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

203. Dream Lecture Series by Korea Foundation for Advanced Studies, Banpo High School, September 13, 2014.

204. 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.

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

206. Seoul National University Department Colloquium, Subgroups of Mapping Class Groups, March 13, 2014

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

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

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

210. 5th East Asian Conference of Algebraic Topology (EACAT 5), Chinese Academy of Sciences, Beijing, China, December 3, 2013.

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

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

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

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

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

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

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

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

219.

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

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

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

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

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

225.

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

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

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

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

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

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

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

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

234. Topology Seminar, KAIST, September 5 2012.

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

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

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

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

239. 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.

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

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

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

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

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

245. Department Colloquium, Seoul National University, Seoul, Korea, September 29,

246.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

265.

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

267. KAIST–POSTECH–SNU YB Workshop, Jeonju, Korea, July 3, 2010.

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

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

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

271. BK21 Seminar, KAIST, January 26 2010.

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

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

274. 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.

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

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

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

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

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

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

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

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

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

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

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

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

287. Student Seminar (exposition), Yale University, May 1, 2004.