

Curriculum Vitae

Yasuyuki Kawahigashi (the University of Tokyo)

Contact Information

Graduate School of Mathematical Sciences
the University of Tokyo
3-8-1 Komaba, Tokyo
153-8914, JAPAN

e-mail: yasuyuki@ms.u-tokyo.ac.jp

webpage: <https://www.ms.u-tokyo.ac.jp/~yasuyuki/index-e.html>

Education

March 1985, B.Sc., Mathematics, The University of Tokyo
June 1986, M.A., Mathematics, University of California, Los Angeles
March 1987, M.Sc., Mathematics, The University of Tokyo (with credit transfer from UCLA)
June 1989, Ph.D., Mathematics, University of California, Los Angeles (Advisor: M. Takesaki)
June 1990, Doctor of Science, The University of Tokyo (Advisor: H. Komatsu)

Academic Appointments

1989–1991, Research Associate, Department of Mathematics, the University of Tokyo
1991–1992, Lecturer, Department of Mathematics, the University of Tokyo
1991–1992, Miller Research Fellow, University of California, Berkeley
1992–1999, Associate Professor, Department of Mathematical Sciences, the University of Tokyo
1999–present, Full Professor, Department of Mathematical Sciences, the University of Tokyo
2011–2012, Visiting Professor, Research Institute for Mathematical Sciences, Kyoto University
2011–present, Senior Scientist, Kavli IPMU, the University of Tokyo (Joint Appointment)
2019–2025, Senior Visiting Scientist, RIKEN (Joint Appointment)
2025–present, Deputy Director of iTHEMS, RIKEN (Joint Appointment)

Fellowships

1985–1986, Chancellor's Fellow, University of California, Los Angeles
1988–1989, Alfred P. Sloan Doctoral Dissertation Fellow
1991–1992, Miller Research Fellow, University of California, Berkeley

Prizes and Academic Distinctions

The first Operator Algebra Prize (Japan), 2000.
Spring Prize, Mathematical Society of Japan, 2002.
Invited speaker at ICM in Rio de Janeiro, 2018.
Publication Prize, Mathematical Society of Japan, 2019

Memberships of Editorial Boards of Journals

Communications in Mathematical Physics (2003–present)
International Journal of Mathematics (2004–present, Chair: 2005–present)
Reviews in Mathematical Physics (2004–present)
Journal of Mathematical Physics (2005–present)
Japanese Journal of Mathematics (Managing Editor: 2006–present)
Journal of Mathematical Sciences, The University of Tokyo (Editor-in-Chief: 2014–present)
Letters in Mathematical Physics (2021–present)
Journal of Topology and Analysis (2021–present)
Mathematics Open (2022–present)
Taiwanese Journal of Mathematics (2023–present)

Academic Memberships

American Mathematical Society
International Association of Mathematical Physics
Mathematical Society of Japan

Long Visits

1988–1989, IHES
2000–2001, MSRI, General Member (Operator Algebra Program)

List of Selected Talks

- [1] Subfactor theory and its applications — Operator algebras and quantum field theory —, Annual meeting of Mathematical Society of Japan (Plenary talk), Meiji University (Japan), March 2002.
- [2] Conformal field theory and operator algebras, International Congress on Mathematical Physics – ICMP 2006 (Plenary talk), Rio de Janeiro (Brazil), August 2006.
- [3] Quantum field theory and operator algebras, 5th Asian Mathematical Conference (Plenary talk), Kuala Lumpur (Malaysia), June 2009.
- [4] Superconformal field theory and operator algebras, Seminal Interactions between Mathematics and Physics, Rome (Italy), September 2010.
- [5] Conformal field theory, vertex operator algebras and operator algebras, ICM 2018, Rio de Janeiro (Brazil), August 2018.
- [6] Quantum symmetries in operator algebras and mathematical physics International Congress on Basic Science, Beijing (China), July 2023.

(172 invited talks at international conferences)

List of Former Ph.D. Students with Current Academic Positions

- Ph.D. 1994: Carl Winsløw, Professor, Center for Science Education, University of Copenhagen (Denmark)
- Ph.D. 1996: Satoshi Goto, Assistant Professor, Sophia University (Japan)
- Ph.D. 1997: Nobuya Sato, Associate Professor, Rikkyo University (Japan)
- Ph.D. 1999: Toshihiko Masuda, Professor, Kyushu University (Japan)
- Ph.D. 2000: Narutaka Ozawa, Professor, RIMS, Kyoto University (Japan)
- Ph.D. 2003: Takeshi Katsura, Professor, Keio University (Japan)
- Ph.D. 2006: Reiji Tomatsu, Professor, Waseda University (Japan)
- Ph.D. 2010: Hiroki Sako, Associate Professor, Niigata University (Japan)
- Ph.D. 2011: Makoto Yamashita, Associate Professor, University of Oslo (Norway)
- Ph.D. 2011: Qin Zhang, Lecturer, China Three Gorges University (China)
- Ph.D. 2013: Yusuke Isono, Associate Professor, RIMS, Kyoto University (Japan)
- Ph.D. 2016: Yuhei Suzuki, Associate Professor, Hokkaido University (Japan)
- Ph.D. 2016: Takuya Takeishi, Associate Professor, Kyoto Institute of Technology (Japan)
- Ph.D. 2017: Yuki Arano, Associate Professor, Nagoya University (Japan)
- Ph.D. 2017: Yosuke Kubota, Associate Professor, Kyoto University (Japan)
- Ph.D. 2017: Shuhei Masumoto, Lecturer, Aichi Institute of Technology (Japan)
- Ph.D. 2018: Zhuofeng He, Assistant Professor, Beijing Institute of Mathematical Sciences and Applications (China)
- Ph.D. 2021: Michiya Mori, Project Assistant Professor, the University of Tokyo (Japan)
- Ph.D. 2022: Mayuko Yamashita, Junior Faculty, Perimeter Institute (Canada)
- Ph.D. 2023: Kan Kitamura, Postdoctoral Fellow, iTHEMS, RIKEN (Japan)
- Ph.D. 2024: Mizuki Oikawa, Associate Fellow, the University of Tokyo (Japan)
- Ph.D. 2025: Miho Mukohara, Assistant Professor, Kyushu University (Japan)

List of Former Postdocs Mentored with Current Academic Positions

Hideaki Izumi (1999–2002), Professor, Chiba Institute of Technology (Japan)

David Kerr (2001–2002, 2004–2005), Professor, University of Münster (Germany)

Srinivasan Raman (2003–2005), Professor, Chennai Mathematical Institute (India)

Takeshi Katsura (2003–2004, 2007), Professor, Keio University (Japan)
 Yoshiko Ogata (2004, 2005–2007), Professor, RIMS, Kyoto University (Japan)
 Tomohiro Ogawa (2005–2008), Associate Professor, the University of Electro-Communications (Japan)
 Reiji Tomatsu (2006–2009), Professor, Waseda University (Japan)
 Mikaël Pichot (2007–2011), Associate Professor, McGill University (Canada)
 Hiroki Sako (2010–2013), Associate Professor, Niigata University (Japan)
 Yoh Tanimoto (2013–2016), Professor, University of Rome, “Tor Vergata” (Italy)
 Yusuke Isono (2013–2015), Associate Professor, RIMS, Kyoto University (Japan)
 Hiroshi Ando (2015), Associate Professor, Chiba University (Japan)
 Juan Orendain (2015–2016), Profesor de Asignatura A, UNAM (Mexico)
 Colin McSwiggen (2020–2021), Assistant Research Fellow, Academia Sinica (Taiwan)
 Taro Sogabe (2023–2024), Assistant Professor, Kyoto University (Japan)
 Maria Stella Adamo (2022–2024), Humboldt Research Fellow, FAU Erlangen-Nürnberg (Germany)
 Valerio Proietti (2022–2023), Marie Skłodowska-Curie postdoctoral fellow, University of Oslo (Norway)
 Naoki Genra (2023–2024), Assistant Professor, University of Toyama (Japan)
 Kan Kitamura (2023–2024), Postdoctoral Fellow, iTHEMS, RIKEN (Japan)
 Pasquale Marra (2019–2025), Assistant Professor, Sophia University (Japan)

List of Selected Conferences/Programs Organized

Subfactors & Algebraic Aspects of Quantum Field Theory, MSRI, Berkeley, U.S.A., December 4–8, 2000.
 Recent Advances in von Neumann Algebras, UCLA, U.S.A., May 14–17, 2003.
 Takagi Lectures (a distinguished lecture series of Mathematical Society of Japan), 2006–present.
 Arbeitsgemeinschaft, Algebraic Structures in Conformal Field Theories, Oberwolfach, Germany, April 1–7, 2007.
 Program: Operator Algebras and Conformal Field Theory, Erwin Schrödinger Institute, Austria, August 25–December 14, 2008.
 RIMS International Project Research 2011 “Operator Algebras and their Applications”, RIMS, Kyoto University, Japan, April 2011–March 2012.
 Subfactors and Conformal Field Theory, Oberwolfach, Germany, March 23–27, 2015.
 Berkeley-Tokyo Autumn School — Quantum Field Theory and Subfactors, UC Berkeley, U.S.A., November 14–23, 2016.
 Subfactors, K -theory and Conformal Field Theory, Isaac Newton Institute for Mathematical Sciences, U.K., June 12–16, 2017.
 Subfactors and Applications, Oberwolfach, Germany, October 27–November 2, 2019.
 Subfactors and Applications, Oberwolfach, Germany, July 28–August 1, 2025.
 Operator Algebras and Mathematical Physics, International Centre for Mathematical Sciences, U.K., September 29–October 3, 2025.

(71 international meetings organized)

List of Selected Committee/Panel Jobs

Analysis Prize, Selection Committee Member, Mathematical Society of Japan, 2006.
 Analysis Prize, Selection Committee Member, Mathematical Society of Japan, 2011.
 Kyoto Prize, Selection Committee member in Mathematics, 2014.
 European Research Council Starting Grants, Panel Member for Mathematics, 2020.
 European Research Council Starting Grants, Panel Member for Mathematics, 2022.
 International Congress of Basic Sciences, Committee Member for Frontier of Science Award in Functional Analysis and Operator Theory, 2023.

List of Recent Grants Obtained as a PI

Grants-in-Aid for Scientific Research (B), Operator Algebras and Mathematical Physics, 2004–2007.

Grants-in-Aid for Scientific Research (A), Operator Algebras and Mathematical Physics, 2007–2011.

Grants-in-Aid for Scientific Research (A), New Development of Operator Algebras and Mathematical Physics, 2011–2015.

Mitsubishi Foundation Grants, Integrated Studies of Operator Algebras, 2011–2012.

Grants-in-Aid for Scientific Research (A), Operator Algebras and Their Applications to Mathematical Physics, 2015–2019.

Grant-in-Aid for Challenging Exploratory Research, Anyon Condensation and Operator Algebras, 2015–2017.

Japan Science and Technology Agency, Preliminary Project: Theoretical Studies of Topological Phases of Matter, 2018–2019.

Grants-in-Aid for Scientific Research (A), Integrated Development of Operator Algebras, 2019–2023.

Grant-in-Aid for Challenging Exploratory Research, Operator Algebras and the Fukaya Categories, 2019–2022.

Japan Science and Technology Agency, Theoretical Studies of Topological Phases of Matter, 2019–2025.

Grant-in-Aid for Challenging Exploratory Research, Operator Algebras and Factorization Algebras, 2024–2027.

Grants-in-Aid for Scientific Research (A), Integrated Studies of Operator Algebras and Mathematical Physics, 2025–2029.

List of Selected Publications

[1] Y. Kawahigashi, C. E. Sutherland & M. Takesaki, The structure of the automorphism group of an injective factor and the cocycle conjugacy of discrete abelian group actions, *Acta Math.* **169** (1992), 105–130.

[2] Y. Kawahigashi, On flatness of Ocneanu’s connections on the Dynkin diagrams and classification of subfactors, *J. Funct. Anal.* **127** (1995), 63–107.

[3] Y. Kawahigashi, Centrally trivial automorphisms and an analogue of Connes’s $\chi(M)$ for subfactors, *Duke Math. J.* **71** (1993), 93–118.

[4] D. E. Evans, Y. Kawahigashi, “Quantum symmetries on operator algebras” (848 pages), Oxford University Press (1998).

[5] J. Böckenhauer, D. E. Evans, Y. Kawahigashi, On α -induction, chiral generators and modular invariants for subfactors, *Commun. Math. Phys.* **208** (1999), 429–487.

[6] Y. Kawahigashi, R. Longo, M. Müger, Multi-interval subfactors and modularity of representations in conformal field theory, *Commun. Math. Phys.* **219** (2001), 631–669.

[7] J. Böckenhauer, D. E. Evans, Y. Kawahigashi, Chiral structure of modular invariants for subfactors, *Commun. Math. Phys.* **210** (2000), 733–784.

[8] Y. Kawahigashi, R. Longo, Classification of local conformal nets: Case $c < 1$, *Ann. of Math.* **160** (2004), 493–522.

[9] Y. Kawahigashi, R. Longo, Classification of two-dimensional local conformal nets with $c < 1$ and 2-cohomology vanishing for tensor categories, *Commun. Math. Phys.* **244** (2004), 63–97.

[10] M. Bischoff, Y. Kawahigashi, R. Longo, K.-H. Rehren, Tensor categories and endomorphisms of von Neumann algebras (with applications to Quantum Field Theory), SpringerBriefs in Mathematical Physics **3**, 2015.

[11] S. Carpi, Y. Kawahigashi, R. Longo, M. Weiner, From vertex operator algebras to conformal nets and back, *Mem. Amer. Math. Soc.* **254** (2018), no. 1213, vi+85 pp.

[12] Y. Kawahigashi, Conformal field theory, vertex operator algebras and operator algebras, Proceedings of the International Congress of Mathematicians, Vol. III, 2597–2616, World Scientific, Rio de Janeiro, 2018.

[13] Y. Kawahigashi, Projector matrix product operators, anyons and higher relative commutants of subfactors, *Math. Ann.* **387** (2023), 2157–2172.

(83 publications and 1513 citations on MathSciNet)