Curriculum Vitae

Yasuyuki Kawahigashi (RIKEN iTHEMS)

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Contact Information
RIKEN iTHEMS
2–1 Hirosawa, Wako
Saitama 351–0198
JAPAN

e-mail: yasuyuki.kawahigashi@riken.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
1999–2026, 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 and Associate Division Director of iTHEMS, RIKEN
2026–present, Project Professor, Department of Mathematical Sciences, the University of Tokyo

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 (in Sections "Analysis and Operator Algebras" and "Mathematical Physics"), 2018.
Publication Prize, Mathematical Society of Japan, 2019
Fellow of the American Mathematical Society, 2025.

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 Invited Lectures
[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.
[7] Operator algebras, tensor categories and tensor networks, International Congress on Basic Science, Beijing (China), July 2024.

(180 invited talks at international conferences)

List of Former Ph.D./M.S. Students with 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. 2019: Tomohiro Hayase, Researcher, RIKEN Center for Advanced Intelligence Project (Japan)
Ph.D. 2021: Michiya Mori, Associate Professor, Niigata University (Japan)
Ph.D. 2022: Mayuko Yamashita, Junior Faculty, Perimeter Institute (Canada)

Ph.D. 2023: Kan Kitamura, Assistant Professor, Rikkyo University (Japan)
Ph.D. 2025: Miho Mukohara, Assistant Professor, Kyushu University (Japan)
Ph.D. 2025: Mao Hoshino, Special Postdoctoral Researcher, iTHEMS, RIKEN (Japan)

M.S. 1998 (Ph.D. at Pennsylvania State University): Marta Asaeda, Associate Professor (tenured), Univerisyt of California, Riverside (U.S.A.) (–2012)

M.S. 1998 (Ph.D. at Columbia University): Keiko Kawamuro, Professor, University of Iowa (U.S.A.)

M.S. 2004 (Ph.D. at Pennsylvania State University): Uuye Otgonbayar, Associate Professor, National University of Mongolia (Mongolia)

M.S. 2008 (Ph.D. at University of Rome, "Tor Vergata"): Yoh Tanimoto, Professor, University of Rome, "Tor Vergata" (Italy)

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)
Adam Skalski (2009), Professor, Institute of Mathematics of the Polish Academy of Sciences (Poland)
Catherine Oikonomides (2010–2013), Associate Professor, Waseda University (Japan)
Hiroki Sako (2010–2013), Associate Professor, Niigata University (Japan)
Pierre Fima (2013) Maître de Conférences, Université Paris Cité (France)
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), Visiting Assistant Professor, Case Western Reserve University (U.S.A.)
Colin McSwiggen (2020–2021), Assistant Research Fellow, Academia Sinica (Taiwan)
Taro Sogabe (2023–2024), Associate Professor, Kumamoto University (Japan)
Maria Stella Adamo (2022–2024), Assistant Professor, Kyoto University (Japan)
Valerio Proietti (2022–2023), Marie Sklodowska-Curie postdoctoral fellow, University of Oslo (Norway)
Naoki Genra (2023–2024), Assistant Professor, University of Toyama (Japan)
Kan Kitamura (2023–2024), Assistant Professor, Rikkyo University (Japan)
Pasquale Marra (2019–2025), Assistant Professor, Sophia Univeristy (Japan)
Mao Hoshino (2025–2026), Special Postdoctoral Researcher, iTHEMS, RIKEN (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.

(77 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.

International Congress of Basic Sciences, Committee Chairman for Frontier of Science Award in Functional Analysis and Operator Theory, 2026.

List of Selected Refereeing Experiences for Journals

Acta Math., *Ann. of Math.*, *Ann. Sci. Ecole Norm. Sup.*, *Comm. Math. Phys.*, *Duke Math. J.*, *Forum Math. Pi*, *Geom. Funct. Anal.*, *Invent. Math.*, *J. Amer. Math. Soc.*, *J. Eur. Math. Soc.*, *J. Funct. Anal.*, *J. Reine Ang. Math.*, *Math. Ann.*, *Mem. Amer. Math. Soc.*, *Proc. Nat. Acad. Sci.*, *Publ. Math. IHES*, *Trans. Amer. Math. Soc.*

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.

CREST (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.

(1624 citations on MathSciNet)

List of All Publications

[1] Y. Kawahigashi, Centrally ergodic one-parameter automorphism groups on semifinite injective von Neumann algebras, *Math. Scand.* **64** (1989), 285–299.

[2] Y. Kawahigashi, One-parameter automorphism groups of the hyperfinite type II_1 factor, *J. Operator Theory* **25** (1991), 37–59.

[3] Y. Kawahigashi, One-parameter automorphism groups of the injective II_1 factor arising from the irrational rotation C^*-algebra, *Amer. J. Math.* **112** (1990), 499–524.

[4] Y. Kawahigashi, One-parameter automorphism groups of the injective II_1 factor with Connes spectrum zero, *Canad. J. Math.* **43** (1991), 108–118.

[5] 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.

[6] Y. Kawahigashi, M. Takesaki, Compact abelian group actions on injective factors, *J. Funct. Anal.* **105** (1992), 112–128.

[7] Y. Kawahigashi, Cohomology of actions of discrete groups on factors of type II_1, *Pacific J. Math.* **149** (1991), 303–317.

[8] Y. Kawahigashi, Automorphisms commuting with a conditional expectation onto a subfactor with finite index, *J. Operator Theory* **28** (1992), 127–145.

[9] Y. Kawahigashi, Group actions on injective factors, in "Current Topics in Operator Algebras", World Scientific Publishing (1991), 2–12.

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

[11] M. Izumi, Y. Kawahigashi, Classification of subfactors with the principal graph $D_n^{(1)}$, *J. Funct. Anal.* **112** (1993), 257–286.

[12] Y. Kawahigashi, Exactly solvable orbifold models and subfactors, in "Functional Analysis and Related Topics", Lect. Notes in Math. 1540, Springer Verlag, (1992), 127–147.

[13] D. E. Evans, Y. Kawahigashi, Orbifold subfactors from Hecke algebras, *Commun. Math. Phys.* **165** (1994), 445–484.

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

[15] D. E. Evans, Y. Kawahigashi, From subfactors to 3-dimensional topological quantum field theories and back — a detailed account of Ocneanu's theory —, *Internat. J. Math.* **6** (1995), 537–558.

[16] D. E. Evans, Y. Kawahigashi, Subfactors and conformal field theory, in "Quantum and non-commutative analysis", Kluwer Academic (1993), 341–369.

[17] D. E. Evans, Y. Kawahigashi, The E_7 commuting squares produce D_{10} as principal graph, *Publ. RIMS Kyoto Univ.* **30** (1994), 151–166.

[18] Y. Kawahigashi, Classification of paragroup actions on subfactors, *Publ. RIMS Kyoto Univ.* **31** (1995), 481–517.

[19] Y. Kawahigashi, Paragroups and their actions on subfactors, in "Subfactors", World Scientific (1994), 64–84.

[20] Y. Kawahigashi, Paragroups as quantized Galois groups of subfactors, *Sugaku Exp.* **9** (1996), 21–35.

[21] D. E. Evans, Y. Kawahigashi, On Ocneanu's theory of symptotic inclusions for subfactors, topological quantum field theories and quantum doubles, *Internat. J. Math.* **6** (1995), 205–228.

[22] Y. Kawahigashi, Orbifold subfactors, central sequences, and the relative Jones invariant κ, *Internat. Math. Res. Notices* **1995** (1995), 129–140.

[23] Y. Kawahigashi, Classification of approximately inner automorphisms of subfactors, *Math. Ann.* **308** (1997), 425–438.

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

[25] D. E. Evans, Y. Kawahigashi, Orbifold subfactors from Hecke algebras II —Quantum doubles and braiding—, *Commun. Math. Phys.* **196** (1998), 331–361.

[26] Y. Kawahigashi, Quantum doubles and orbifold subfactors, in "Operator Algebras and Quantum Field Theory", International Press (1997), 271–283.

[27] Y. Kawahigashi, Subfactors and paragroup theory, in "Operator Algebras and Operator Theory", Contemp. Math. **228** (1998), 179–188.

[28] Y. Kawahigashi, Quantum Galois correspondence fos subfactors, *J. Funct. Anal.* **167** (1999), 498–520.

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

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

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

[32] J. Böckenhauer, D. E. Evans, Y. Kawahigashi, Longo-Rehren subfactors arising from α-induction, *Publ. RIMS, Kyoto Univ.* **37** (2001), 1–35.

[33] Y. Kawahigashi, Braiding and nets of factors on the circle, in "Operator Algebras and Applications", Adv. Stud. Pure Math. **38**, (2004), 219–228.

[34] Y. Kawahigashi, Braiding and extensions of endomorphisms of subfactors, in "Mathematical Physics in Mathematics and Physics", R. Longo ed., The Fields Institute Communications **30**, AMS Publications (2001), 261–269.

[35] Y. Kawahigashi, Generalized Longo-Rehren subfactors and α-induction, *Commun. Math. Phys.* **226** (2002), 269–287.

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

[37] Y. Kawahigashi, Conformal quantum field theory and subfactors, *Acta Math. Sin.* **19** (2003), 557–566.

[38] Y. Kawahigashi, N. Sato, M. Wakui, (2+1)-dimensional topological quantum field theory from subfactors and Dehn surgery formula for 3-manifold invariants, *Adv. Math.* **195** (2005), 165–204.

[39] Y. Kawahigashi, Classification of operator algebraic conformal field theories, in "Advances in Quantum Dynamics", Contemp. Math. **335** (2003) 183–193.

[40] 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.

[41] Y. Kawahigashi, Subfactor theory and its applications — operator algebras and quantum field theory —, in "Selected Papers on Differential Equations", Amer. Math. Soc. Transl. **215**, Amer. Math. Soc. (2005), 97–108.

[42] Y. Kawahigashi, Topological quantum field theories and operator algebras, in "Quantum Field Theory and Noncommutative Geometry", Lect. Notes in Phys. 662, Springer Verlag, (2005), 241–253.

[43] Y. Kawahigashi, Classification of operator algebraic conformal field theories in dimensions one and two, in "XIVth International Congress on Mathematical Physics", World Scientific (2005), 476–485.

[44] Y. Kawahigashi, R. Longo, Noncommutative spectral invariants and black hole entropy, *Commun. Math. Phys.* **257** (2005), 193–225.

[45] Y. Kawahigashi, R. Longo, Local conformal nets arising from framed vertex operator algebras, *Adv. Math.* **206** (2006), 729–751.

[46] Y. Kawahigashi, R. Longo, U. Pennig, K.-H. Rehren, Classification of non-local chiral CFT with $c < 1$, *Commun. Math. Phys.* **271** (2007), 375–385.

[47] Y. Kawahigashi, Conformal field theory and operator algebras, in "New Trends in Mathematical Physics", Springer (2009), 345–356.

[48] S. Carpi, Y. Kawahigashi, R. Longo, Structure and classification of superconformal nets, *Ann. Henri Poincaré* **9** (2008), 1069–1121.

[49] Y. Kawahigashi, Superconformal field theory and operator algebras, in "Noncommutativity and Singularities", Adv. Stud. Pure Math. **55** (2009), 69–81.

[50] S. Carpi, R. Hillier, Y. Kawahigashi, R. Longo, Spectral triples and the super-Virasoro algebra, *Commun. Math. Phys.* **295** (2010), 71–97.

[51] Y. Kawahigashi, From operator algebras to superconformal field theory, *J. Math. Phys.* **51** (2010), 015209.

[52] S. Carpi, Y. Kawahigashi, R. Longo, On the Jones index values for conformal subnets, *Lett. Math. Phys.* **92** (2010), 99–108.

[53] S. Carpi, Y. Kawahigashi, R. Longo, How to add a boundary condition, *Commun. Math. Phys.* **322** (2013), 149–166.

[54] S. Carpi, R. Hillier, Y. Kawahigashi, R. Longo, F. Xu, $N = 2$ superconformal nets, *Commun. Math. Phys.* **336** (2015), 1285–1328.

[55] Y. Kawahigashi, N. Suthichitranont, Construction of holomorphic local conformal framed nets, *Internat. Math. Res. Notices* **2014** (2014), 2924–2943.

[56] Y. Kawahigashi, Y. Ogata, E. Størmer, Normal states of type III factors, *Pacific J. Math.* **267** (2014), 131–139.

[57] M. Bischoff, Y. Kawahigashi, R. Longo, K.-H. Rehren, Phase boundaries in algebraic conformal QFT, *Commun. Math. Phys.* **342** (2016), 1–45.

[58] 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.

[59] M. Bischoff, Y. Kawahigashi, R. Longo, Characterization of 2D rational local conformal nets and its boundary conditions: the maximal case, *Doc. Math.* **20** (2015), 1137–1184.

[60] 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.

[61] Y. Kawahigashi, Conformal field theory, tensor categories and operator algebras, *J. Phys. A*, **48** (2015), 303001.

[62] Y. Kawahigashi, A remark on gapped domain walls between topological phases, *Lett. Math. Phys.* **105** (2015), 893–899.

[63] Y. Kawahigashi, A relative tensor product of subfactors over a modular tensor category, *Lett. Math. Phys.* **107** (2017), 1963–1970.

[64] Y. Kawahigashi, The relative Drinfeld commutant of a fusion category and α-induction, *Internat. Math. Res. Notices* **2019** (2019), 6304–6316.

[65] 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.

[66] Y. Kawahigashi, A remark on matrix product operator algebras, anyons and subfactors, *Lett. Math. Phys.* **110** (2020), 1113–1122.

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

[68] Y. Kawahigashi, Two-dimensional topological order and operator algebras, *Internat. J. Modern Phys. B* **35** (2021), 2130003 (16 pages).

[69] Y. Kawahigashi, A characterization of a finite-dimensional commuting square producing a subfactor of finite depth, *Internat. Math. Res. Notices* **2023** (2023), 8419–8433.

[70] Y. Kawahigashi, α-induction for bi-unitary connections, *Quantum Topol.* **15** (2024), 503–536.

[71] D. E. Evans, Y. Kawahigashi, Subfactors and mathematical physics, *Bull. Amer. Math. Soc.* **60** (2023), 459–482.

[72] V. Benedetti, H. Casini, Y. Kawahigashi, R. Longo, J. M. Magan, Modular invariance as completeness, *Phys. Rev. D* **110** (2024), 125004.

[73] Y. Kawahigashi, Flatness of α-induced bi-unitary connections and commutativity of Frobenius algebras, *Internat. Math. Res. Notices* **2025** (2025), rnaf255.

[74] Y. Kawahigashi, The zipper condition for 4-tensors in two-dimensional topological order and the higher relative commutants of a subfactor arising from a commuting square, *Lett. Math. Phys.* **116** (2026), 36.