Junichiro Matsuda / 松田 隼一朗

Current Address

Department of Pure Mathematics,
University of Waterloo,
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Personal Data

Born in Osaka, Japan, May 1996
Email: jmatsuda@uwaterloo.ca
Homepage: JunichiroMatsuda.github.io
Post-doc at University of Waterloo

Research Interests

Quantum Graph Theory and related topics, including Operator Algebra Theory, Quantum Group Theory, Tensor Category Theory, Quantum Information Theory, Expander Graphs, etc.

Diploma

Ph.D.	Department of Mathematics, Graduate School of Science, Kyoto University	25 March 2024
MSc	Department of Mathematics, Graduate School of Science, Kyoto University	23 March 2021
BSc	Faculty of Science, Kyoto University	26 March 2019

Education

PhD	Department of Mathematics, Graduate School of Science, Kyoto University, supervisor Benoît Collins / 京都大学大学院 理学研究科 数学・数理解析専攻 数学系	April 2021 – March 2024
MSc	Department of Mathematics, Graduate School of Science, Kyoto University, supervisor Benoît Collins / 京都大学大学院 理学研究科 数学・数理解析専攻 数学系	April 2019 – March 2021
BSc	Faculty of Science, Kyoto University / 京都大学 理学部 数理科学系	April 2015 – March 2019
	Osaka Prefectural Otemae High School / 大阪府立 大手前高等学校	April 2012 – March 2015

Employment

University of Waterloo	Postdoctoral Scholar	45,000 CAD/yr	April 2025 – April 2026
(University of Waterloo	Postdoctoral Fellow	self-funded	June 2024 – March 2025)
Kyoto University	Research Fellow		July 2022 – December 2022
Kyoto University	Research Assistant		April 2021 – February 2022
Kyoto University	Teaching Assistant		April 2019 – July 2023
Kyoto University	Office Assistant of Prof. Benoît Collins		November 2018 – November 2023

Teaching

University of Waterloo	Calculus 3 (MATH 207)	8,910 CAD	January 2026 – April 2026
University of Waterloo	Calculus 1 (MATH 137)	8,910 CAD	September 2025 – December 2025

TA in detail

Teacher (without honorifics)	Lecture	Semester
高棹 圭介 / Keisuke Takasao	解析学 I / Analysis I (Measure Theory)	April 2023 – July 2023
筒井 容平 / Yohei Tsutsui	解析学 II / Analysis II (Fourier Analysis)	October 2022 – January 2023
泉 正己 / Masaki Izumi	函数解析学 / Functional Analysis	October 2021 – January 2022
吉川 謙一 / Ken-Ichi Yoshikawa	複素函数論 / Function Theory of A Complex Variable	April 2021 – July 2021
川越 大輔 / Daisuke Kawagoe	解析学入門演習 / Exercises in Basic Analysis	October 2020 – January 2021
荒野 悠輝 / Yuki Arano	解析学演義 I / Exercises in Analysis I	May 2020 – July 2020
佐藤 康彦 / Yasuhiko Sato	解析学入門演習 / Exercises in Basic Analysis	October 2019 – January 2020
Benoît Collins	線形代数学 A / Linear Algebra A	April 2019 – July 2019

Funding

April 2024 – March 2025	PD, JSPS KAKENHI Grant Number JP23KJ1270	900,000+270,000 (research expense) + 4,344,000 (support) JPY
April 2023 – March 2024	DC2, JSPS KAKENHI Grant Number JP23KJ1270	900,000 (research expense) + 2,400,000 (support) JPY
April 2021 – March 2023	JST, the establishment of university fellowships towards the creation of science technology innovation, Grant Number JPMJFS2123	300,000 (research expense) + 1,800,000 (support) JPY/yr

Language

Japanese	My native language. I can speak, catch, read, and write Japanese fluently at an academic level.
English	I speak and catch English not as fluently as native speakers, but enough for mathematical discussions. Because of formal grammatical knowledge, I'm better at writing and reading than speaking.
(Arabic	I slightly learned Fuṣḥā as my second foreign language at Kyoto University. I can distinguish and pronounce Arabic letters and use the dictionary, but my knowledge is insufficient for conversation.)

Papers

Preprints

Michael Brannan, Daniel Gromada, Junichiro Matsuda, Adam Skalski, Mateusz Wasilewski: *A quantum Frucht theorem and quantum automorphisms of quantum Cayley graphs*, . doi: arxiv:2503.11149

Publications

Junichiro Matsuda: *Algebraic connectedness and bipartiteness of quantum graphs*, Communications in Mathematical Physics **405**, no. 185 (2024). doi:10.1007/s00220-024-05046-y arxiv:2310.09500

Junichiro Matsuda: *Classification of quantum graphs on M_2 and their quantum automorphism groups*, Journal of Mathematical Physics **63**, no. 9 (2022): 092201. doi:10.1063/5.0081059 arxiv:2110.09085

Ph.D. Thesis

Junichiro Matsuda: *Classification of Quantum Graphs on M_2 and algebraic characterization of properties of quantum graphs*, Department of Mathematics, Graduate School of Science, Kyoto University. doi:10.14989/doctor.k25089

Presentations

Talks

2025 May 28. *Regular quantum graphs have an integral degree that admits non-classical values.* Canadian Operator Symposium 2025, University of Waterloo, Waterloo, Canada.

2025 May 24. *Algebraic approach to regular quantum graphs.* COMPhY 2025, University of Waterloo, Waterloo, Canada.

2025 February 21. *Quantum graphs violate the classical characterization of the existence of regular graphs.* Workshop on Quantum Graphs, Saarland University, Saarbrücken, Germany.

2024 December 3. *On the degree of regular quantum graphs.* New trends at the intersection of quantum information theory, quantum groups and operator algebras, Isaac Newton Institute, Cambridge, UK.
2024 July 8. *On the degree of regular quantum graphs.* Banach Algebras and Operator Algebras 2024, University of Waterloo, Waterloo, Canada.
2024 January 16. *On the degree of regular quantum graphs.* KOAS, RIMS, Kyoto, Japan.
2024 January 9. *Algebraic connectedness and bipartiteness of quantum graphs.* UCSD Functional Analysis Seminar, UCSD, San Diego, US.
2023 November 30. *Algebraic connectedness and bipartiteness of quantum graphs.* Waterloo Analysis Seminar, University of Waterloo, Waterloo, Canada.
2023 September 6. *Introduction to expander graphs.* Functional Analysis Junior Workshop 2023, Kyoto Institute of Technology, Kyoto, Japan.
2023 January 30. *Algebraic connectedness and bipartiteness of regular quantum graphs.* The 8th KTGU Mathematics Workshop for Young Researchers, Kyoto University, Kyoto, Japan.
2022 November 8. *Algebraic connectedness and bipartiteness of regular quantum graphs.* KOAS, RIMS, Kyoto, Japan.
2022 September 20. *Spectral approaches to quantum graphs and applications to quantum information.* Focus Semester on Quantum Information: Preparatory seminar, Saarland University, Saarbrücken, Germany.
2022 September 7. *Spectral characterization of some properties of quantum graphs.* Recent Developments in Operator Algebras, RIMS, Kyoto, Japan.
2022 September 1. *Spectral approaches to quantum graphs.* Functional Analysis Junior Workshop 2022, Campus Plaza Kyoto, Kyoto,Japan.
2022 June 9. *Spectral characterization of some properties of quantum graphs.* Summer School on Free Probability, Random Matrices, and Applications, University of Wyoming, Laramie, US.
2022 June 2. *Spectral characterization of some properties of quantum graphs.* Canadian Operator Symposium, 50th anniversary, University of Ottawa, Ottawa, Canada.
2022 May 25. *Classification of Quantum Graphs on M_2 and their Quantum Automorphism Groups.* Topological Quantum Groups, C^*-Tensor Categories, and Subfactors, University of Waterloo, Waterloo, Canada.
2022 March 2. *Classification of Quantum Graphs on M_2 and their Quantum Automorphism Groups.* The 18th Mathematics Conference for Young Researchers, Hokkaido University, Hokkaido (online), Japan.
2021 December 7. *Classification of Quantum Graphs on M_2 and their Quantum Automorphism Groups.* Tokyo-Kyoto Joint Online Operator Algebra Seminar, Zoom (online), Janan.
2021 November 23. *Classification of Quantum Graphs on M_2 and their Quantum Automorphism Groups.* Workshop on “Non-commutative Probability and Related Fields 2021”, Nagoya University, Nagoya (hybrid), Japan.
2021 November 4. *Introduction to quantum graphs.* Student Colloquium, Kyoto University, Kyoto (online), Japan.
2021 September 27. *Quantum Graphs on M_2 and their Quantum Automorphism Groups.* Future Advanced Quantum Technology Workshop 2021, Kyoto University, Kyoto (online), Japan.
2021 September 23. *On the spectra of regular quantum graphs.* Functional Analysis Junior Workshop 2021, Zoom (online), Japan.
2020 September 16. *Quantum graphs on finite dimensional C^*-algebras.* Functional Analysis Junior Meeting 2020 Online, Zoom (online), Japan.

Poster Presentations

2023 March 14. *Algebraic connectedness and bipartiteness of quantum graphs.* International Symposium on Advanced Quantum Technology for Future 2023, Kyoto University, Kyoto, Japan.
2022 October 29. *Spectral characterization of some properties of quantum graphs.* Exchange Meeting for Different Fields and Industries 2022, The Mathematical Society of Japan (online), Japan.
2022 March 8. *Spectral bound for regular quantum graphs.* International Symposium on Advanced Quantum Technology for Future 2022, Kyoto University, Kyoto (online), Japan.

Ph.D. defense talk

2024 January 25. *Classification of Quantum Graphs on M_2 and algebraic characterization of properties of quantum graphs.* , Kyoto University, Kyoto, Japan.

Seminar Organizations

Catch-all Mathematical Colloquium of Japan (Operational Assistant) October 2021 – October 2023