Dr. Eva-Maria Hekkelman

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Education

2021 – 2025   🔖 **Ph.D. Mathematics, UNSW Sydney**, Australia. Primary supervisor Fedor Sukochev, co-supervisors Edward McDonald and Dmitriy Zanin.
Thesis: *Trace Formulas in Noncommutative Geometry*.

2018 – 2021   🔖 **M.Sc. Mathematical Physics (cum laude), Radboud University Nijmegen**, The Netherlands.
Thesis: *Truncated Geometry on the Circle*, supervised by Walter van Suijlekom.

2015 – 2018   🔖 **B.Sc. Mathematics (cum laude), Radboud University Nijmegen**, The Netherlands.
Thesis: *Properties of the Lattice $\mathcal{O}(\Sigma_A)$ Concerning Intuitionistic Quantum Logic*, in collaboration with Quinten Rutgers, supervised by Klaas Landsman.

🔖 **B.Sc. Physics and Astronomy (cum laude), Radboud University Nijmegen**, The Netherlands.

Working Experience

Starting Sept. 2025   🔖 **Postdoctoral Fellow,** Max Planck Institute for Mathematics (MPIM) Bonn, Germany. Local mentor Matthias Lesch. Two-year appointment.

2023 – 2025   🔖 **Teaching Assistant,** UNSW Sydney, Australia. Courses:
- Mathematics 1A (linear algebra and calculus);
- Higher Mathematics 1A;
- Mathematics 1B (linear algebra and calculus, sequel of Mathematics 1A);
- Discrete Mathematics (set theory, logic, and combinatorics);
- Several Variable Calculus;
- Higher Several Variable Calculus.

2022 – 2023   🔖 **Research Assistant,** UNSW Sydney, Australia. Assisted in typesetting and editing:
- S. Lord, E. McDonald, F. Sukochev, and D. Zanin. *Singular traces. Vol. 2. Trace Formulas.* Vol. 46/2. De Gruyter Studies in Mathematics. Second edition. De Gruyter, Berlin, 2023, pp. xl+471.
- P. G. Dodds, B. de Pagter, and F. A. Sukochev. *Noncommutative integration and operator theory.* Vol. 349. Progress in Mathematics. Birkhäuser/Springer, Cham, 2023, pp. xi+577.

2017 – 2021   🔖 **Teaching Assistant,** Radboud University Nijmegen, The Netherlands. Courses:
- Operator Algebras (MSc level course);
- Partial Differential Equations;
- Topology;
- Rings and Fields;
- Curves and Surfaces;
- Mathematical Models of Population Dynamics.

Research Publications

Preprints

1 E.-M. Hekkelman, E. A. McDonald, and T. D. van Nuland, "Multiple operator integrals, pseudodifferential calculus, and asymptotic expansions," arXiv:2404.16338, 2024. 🔗 DOI: `10.48550/arXiv.2404.16338`.

2 E.-M. Hekkelman and E. A. McDonald, "A noncommutative integral on spectrally truncated spectral triples, and a link with quantum ergodicity," arXiv:2412.00628, 2024. 🔗 DOI: `10.48550/arXiv.2412.00628`.

Journal Articles

1 E.-M. Hekkelman and E. A. McDonald, "A general Dixmier trace formula for the density of states on open manifolds," *SIGMA Symmetry Integrability Geom. Methods Appl.*, vol. 20, Paper No. 007, 34, 2024, ISSN: 1815-0659. 🔗 DOI: `10.3842/SIGMA.2024.007`.

2 N. Azamov, E.-M. Hekkelman, E. A. McDonald, F. A. Sukochev, and D. Zanin, "An application of singular traces to crystals and percolation," *J. Geom. Phys.*, vol. 179, Paper No. 104608, 22, 2022, ISSN: 0393-0440,1879-1662. 🔗 DOI: `10.1016/j.geomphys.2022.104608`.

3 E.-M. Hekkelman, "Truncated geometry on the circle," *Lett. Math. Phys.*, vol. 112, no. 2, Paper No. 20, 19, 2022, ISSN: 0377-9017,1573-0530. 🔗 DOI: `10.1007/s11005-022-01514-5`.

Miscellaneous Experience

Awards and Achievements

2025	Invitation (with funding) to participate in the 2025 **Austral Winter Workshop on Microlocal Analysis and Non-elliptic Fredholm Theory**, Mathematical Sciences Institute Australian National University, Canberra.
2024	**Visiting Scholar at Penn State University**, invited by professor Nigel Higson. One-month research visit at Penn State University, USA in October 2024.
	AustMS WIMSIG Cheryl E. Praeger Travel Award, awarded AU\$3,000 by the Australian Mathematical Society towards funding the above trip to Penn State University.
2022	**Outstanding Pure Mathematics Talk**, at the 2022 Postgraduate Conference of the School of Mathematics and Statistics at UNSW Sydney.
2021	**Award ('pluim') for excellent teaching**. Awarded by the student body 'OLC Wiskunde' at Radboud University, on basis of outstanding student evaluations of the course Partial Differential Equations.
2020	Month-long tour with the **Dutch National Student Orchestra**, concerts in the Netherlands, Luxembourg and Aachen.
2019	**Cultural Top Talent**, awarded by Radboud University.
	Month-long tour with the **Dutch National Student Orchestra**, concerts in the Netherlands, Berlin and Leuven.
2017	Month-long tour with the **Dutch National Student Orchestra**, concerts in the Netherlands and London.
2016 – 2018	**Radboud Honours Academy**. Program consisted of writing a research proposal in an interdisciplinary group and writing a BSc thesis for double the usual credits. Visited Dr. Bert Lindenhovius at Tulane University, USA.

Selected talks

2025	Invited speaker at **Gongfest 2025**, University of Wollongong, Australia.

Miscellaneous Experience (continued)

2024
- Invited speaker for the **INdAM Workshop on Noncommutative Geometry and Applications**, Cortona, Italy, 28th June - 4th July 2024.
- Quantum Working Group Seminar at **University of Illinois Urbana-Champaign**, USA.
- Noncommutative Geometry Seminar at **Penn State University**, USA.
- Noncommutative Geometry Seminar at **Radboud University**, The Netherlands.
- **University of Wollongong** Operator Algebras and Noncommutative Geometry seminar, Australia.

2023
- **Conference on Noncommutative Harmonic Analysis and Rigidity Theory in Operator Algebras**, Delft University of Technology, The Netherlands.
- Noncommutative Geometry Seminar at **Radboud University**, The Netherlands.
- **University of Wollongong** Operator Algebras and Noncommutative Geometry seminar, Australia.
- Plenary lecture at the Postgraduate Conference of the School of Mathematics and Statistics at **UNSW Sydney**.

2022
- 66th Annual Meeting of the **Australian Mathematical Society** at **UNSW Sydney**.
- Postgraduate Conference of the School of Mathematics and Statistics at **UNSW Sydney**.

Service

2024 – · · · ·
- **Peer reviewing**, three manuscripts in total.

2023 – 2024
- **Equity Diversity & Inclusion Committee** at the School of Mathematics and Statistics, UNSW Sydney.

2019 – 2020
- **Secretary** at the Dutch National Student Orchestra. Worked one year (full-time) to organise a month-long concert tour in a team with six students, for an orchestra consisting of 100 students. Responsible for coordinating the efforts of an additional 100 volunteers to promote the concerts. Resulted in 8,000 tickets sold for 13 concerts and a surplus of €27,000 on a budget of €250,000.

2018 – 2019
- **Treasurer** at Nijmeegs Studentenorkest CMC. Responsible for the finances and financial administration of a student orchestra consisting of 50 members with a yearly budget of €40,000