# Frédéric Latrémolière, Ph.D.

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## Academic Vitae

**2004** *Ph.D. in Mathematics*
University of California, Berkeley
*Advisor:* Marc A. Rieffel; *Topic:* Noncommutative Metric Geometry.

**2000** *Candidate in Mathematics*
University of California, Berkeley

**1999** *Master in Arts in Statistics*
University of California, Berkeley

**1998** *Statisticien-Economiste / Ingénieur Statisticien*
Ecole Nationale de la Statistique et de l'Administration Economique, Paris

**1997** *Maitrise de Mathématiques et Applications Fondamentales mention bien*
Université Pierre et Marie Curie, Paris VI

## Professional Vitae

**Since Fall 2016** *Full Professor of Mathematics* with tenure, University of Denver

**2012–2016** *Associate Professor of Mathematics* with tenure, University of Denver

**2007–2012** *Assistant Professor of Mathematics*, University of Denver

**2006–2007** *Visiting assistant professor of Mathematics*, University of Cincinnati

**2004–2006** *Postdoctoral Fellow in Mathematics*, University of Toronto

## Visiting Positions

**Spring 2026** *Ulam Visiting Professor*, University of Colorado, Boulder

**Fall 2013** *Ulam Visiting Professor*, University of Colorado, Boulder

## Full List of Publications

53. *Spectral continuity of almost commutative manifolds for the $C^1$ topology on Riemannian metrics*,
F. Latrémolière, Submitted (2026), 32 pages, arXiv: 2603.19128.

52. *The quantum Gromov-Hausdorff Hypertopology on the class of pointed Proper Quantum Metric Spaces*,
F. Latrémolière, Submitted (2025), 85 pages, arXiv:2512.03573.

51. *Continuity for the spectral propinquity of Dirac operators associated with analytic path of Riemannian metrics*,
C. Farsi, F. Latrémolière, Submitted (2025), 15 pages, arXiv:2504.11715.

50. *Collapse in Noncommutative Geometry and Spectral Continuity*,
C. Farsi, F. Latrémolière, Submitted (2024), 41 pages, arXiv: 2404.00240.

49. *Spectral Triples on noncommutative solenoids from the standard spectral triples on quantum tori*,
C. Farsi, F. Latrémolière, J. Packer, Proc. Amer. Math. Soc. **154** (2026) 2, 641–655, arXiv: 2403.16323.

48. *Domains of quantum metrics on AF algebras*,
K. Aguilar, K. von Bornemann Hjelmborg, F. Latrémolière, Accepted (2025) in IWOTA 2023 Conference Proceedings, in: Operator Theory: Advances and Applications, Springer, 11 pages, arXiv: 2402.05520.

47. *Convergence of inductive sequences of spectral triples for the spectral propinquity*,
C. Farsi, F. Latrémolière, J. Packer, Adv. Math. **437** (2024), Paper No. 109442, 59 pp., ArXiv: 2301.00274

46. *Isometry groups of inductive limits of metric spectral triples and Gromov-Hausdorff convergence*,
J. Bassi, R. Conti, C. Farsi, F. Latrémolière, J. London Math. Soc. **108** (2023) 4, pp. 1488-1530, ArXiv: 2302.09117.

45. *The strongly Leibniz property and the Gromov-Hausdorff propinquity*,
K. Aguilar, S. R. Garcia, E. Kim, F. Latrémolière, J. Math. Anal. Appl. **529** (2024), no. 1, Paper No. 127572, 22 pp., ArXiv: 2301.05692.

44. *Continuity of the Spectrum of Dirac Operators of Spectral Triples for the Spectral Propinquity*
F. Latrémolière, Math. Annalen, 48 pages, ArXiv: 2112.11000, https://doi.org/10.1007/s00208-023-02659-x.

43. *An ideal convergence*
K. Aguilar, S. Brooker, F. Latrémolière, A. Lòpez, Notices Amer. Math. Soc. **68** (2021), no. 8, 1269–1281.

42. *Finite Dimensional Approximations of the spectral triples of quantum tori*
F. Latrémolière, Commun. Math. Phys. **38** (2021), 1049–1128, ArXiv: 2102.03729.

41. *Metric Approximations of Spectral Triples on the Sierpiński gasket and other fractals*
T. Landry, M. Lapidus and F. Latrémolière, Adv. Math. **385** (2021), 107771, 43p, ArXiv: 2010.06921.

40. *A Gromov-Hausdorff distance for Spectral Triples*
F. Latrémolière, Adv. Math. **404** (2022), paper 108393, 56 pages, ArXiv: 1811.10843.

39. *Finite dimensional approximations of the Bunce-Deddens algebras as quantum metric spaces*,
K. Aguilar, F. Latrémolière, Integral Equations Operator Theory **94** (2021) 1, paper. no 2, 42 pages, ArXiv: 2008.07676.

38. *The Dual-Modular Gromov-Hausdorff Propinquity and Completeness*
F. Latrémolière, J, Noncommut. Geom. **15** (2021) 1, 347–398, ArXiv: 1811.04534.

37. *A survey of the preservation of symmetries by the dual Gromov-Hausdorff propinquity*
F. Latrémolière, C. R. Math. Rep. Acad. Sci. Canada Vol. **40** (3) 2018, pp. 65–90.

36. *Convergence of Cauchy sequences for the Covariant Gromov-Hausdorff propinquity*
F. Latrémolière, Journal of Mathematical Analysis and Applications **24**a (2018) pp. 378–404, ArXiv: 1806.04721.

35. *The Covariant Gromov-Hausdorff propinquity*
F. Latrémolière, 31 pages, Studia Mathematica **208** (2020) 2, pp. 135–169, ArXiv: 1805.11229.

34. *Convergence of the Heisenberg modules over quantum two-tori for the modular Gromov-Hausdorff propinquity*
F. Latrémolière, Journal of Operator Theory **84** (2020) 1, pp. 211–237, ArXiv: 1803.06601.

33. *Actions of small categories on Limits for the Gromov-Hausdorff Propinquity*
F. Latrémolière, Journal of Geometry and Physics **146** (2019), 103481, ArXiv: 1708.01973.

32. *Some applications of conditional expectations to convergence for the quantum Gromov-Hausdorff propinquity*
K. Aguilar, F. Latrémolière, 12 pages, Accepted in Banach Center Publications (2017), ArXiv: 1708.00595.

31. *Heisenberg modules over quantum* 2*-tori are metrized quantum vector bundles*
F. Latrémolière, 38 pages, Canadian Journal of Mathematics (2019), ArXiv: 1703.07073.

30. *The modular Gromov-Hausdorff propinquity*
F. Latrémolière, 67 pages, Dissertationes Mathematicae **544** (2019) 70pp, ArXiv: 1608.04881.

29. *Equivalence of Quantum Metrics with common domains*
F. Latrémolière, Journal of Mathematical Analysis and Application **443** (2016), pp. 1179–1195, ArXiv: 1604.00755.

28. *Noncommutative Solenoids and the Gromov-Hausdorff propinquity*
F. Latrémolière, J. Packer, Proc. Amer. Math. Soc. **145** (2017) 5, pp. 2043–2057, ArXiv: 1601.02707.

27. *Quantum Ultrametrics on AF algebras and the Gromov-Hausdorff propinquity*
K. Aguilar, F. Latrémolière, Studia Mathematica **231** (2015) 2, pp. 149–193, ArXiv: 1511.07114.

26. *Curved Noncommutative Tori as Leibniz Quantum Compact Metric Spaces*
F. Latrémolière, Journal of Mathematical Physics **56** (2015) 12, 123503, 16 pp., ArXiv: 1507.08771.

25. *Quantum Metric Spaces and the Gromov-Hausdorff Propinquity*
F. Latrémolière, *Noncommutative Geometry and optimal transport*, pp. 47–133, Contemp. Math. **676**, Amer. Math. Soc., ArXiv: 1506.04341 .

24. *A Compactness Theorem for The Dual Gromov-Hausdorff Propinquity*
F. Latrémolière, Indiana University Mathematics Journal **66** (2017) 5, pp. 1707–1753, ArXiv: 1501.06121.

23. *Topographic Gromov-Hausdorff Quantum Hypertopology for Proper Quantum Metric Spaces*
F. Latrémolière, 67 pages, Submitted, (2014), ArXiv: 1406.0233.

22. *Explicit Construction of Equivalence Bimodules between noncommutative Solenoids*
F. Latrémolière, J. Packer, *Trends in harmonic analysis and its applications*, 111–140, Contemp. Math., **650**, Amer. Math. Soc., ArXiv: 1410.0808.

21. *The Triangle Inequality and The Dual Gromov-Hausdorff Propinquity*
F. Latrémolière, Indiana Univ. Math. J. **66** (2017) 1, pp. 297–313, ArXiv: 1404.6330.

20. *Convergence of Fuzzy Tori to Quantum Tori for the quantum Gromov-Hausdorff propinquity: an explicit approach*
F. Latrémolière, Münster Journal of Mathematics **8** (2015), pp. 57–98, ArXiv: 1312.0069.

19. *Noncommutative solenoids and their projective modules*
F. Latrémolière, J. Packer, 19 pages, to appear in *Commutative and Noncommutative Harmonic Analysis and Applications*, AMS Contemp. Math. (2013), ArXiv: 1311.1193.

18. *The Dual Gromov-Hausdorff Propinquity*
F. Latrémolière, Journal de Mathématiques Pures et Appliquées, **103** (2015) 2, pp. 303–351, ArXiv: 1311.0104.

17. *The Quantum Gromov-Hausdorff Propinquity*
F. Latrémolière, Transactions of the American Math. Society **368** (2016) 1, pp. 365–411, published online on May 22, 2015, `http://dx.doi.org/10.1090/tran/6334`; ArXiv: 1302.4058.

16. *Quantum Locally Compact Metric Spaces*
F. Latrémolière, Journal of Functional Analysis, **264** (2013) 1, pp. 362–402, ArXiv: 1208.2398.

15. *Classification of Noncommutative Domain Algebras*
A. Arias, F. Latrémolière, C. R. Acad. Sci. Paris, Ser. I, **350** (2012), pp. 609–611, ArXiv: 1203.5548.

14. *Noncommutative Solenoids*
F. Latrémolière, J. Packer, 26 pages, New York Journal of Mathematics **24**a (2018), pp. 155–191, ArXiv: 1110.6227.

13. *Symmetry in the Cuntz Algebra on two generators*
M.-D. Choi, F. Latrémolière, Journal of Mathematical Analysis and Application **387** (2012), pp. 1050–1060, ArXiv: 1010.5842.

12. *Isomorphisms of Noncommutative Domain Algebras II*
A. Arias, F. Latrémolière, Journal of Operator Theory **70** (2013) 1, pp. 273–290, ArXiv: 1010.5838.

11. *Ergodic Actions of Convergent Fuchsian groups on noncommutative Hardy Algebras*
A.Arias, F. Latrémolière, Proceedings on the AMS **139** (2011) 7, pp. 2485–2496, ArXiv: 1010.5840.

10. *$C^*$-algebraic characterization of orbit injection equivalence for minimal free Cantor systems*
F. Latrémolière, N. Ormes, Rocky Mountain Journal of Mathematics **42** (2012) 1, pp. 157–200, ArXiv: 0903.1881.

9. *Isomorphisms of Noncommutative Domain Algebras*
A. Arias, F. Latrémolière, Journal of Operator Theory **66** (2011) 2, pp. 425–450, Arxiv: 09020195.

8. *Boolean inner-product spaces and Boolean matrices*
S. Gudder, F. Latrémolière, Linear Algebra and Applications **431** (2009) 1-2, 272-296, ArXiv: 0902.1290.

7. *Characterization of the Sequential Product on Quantum Effects*
   S. Gudder, F. Latrémolière, Journal of Mathematical Physics **49** (2008) 5, 7 pages, ArXiv: 0803.3867.

6. *Irreducible Representations of C*-crossed-products by finite groups*
   A. Arias, F. Latrémolière, Journal of the Ramanujan Mathematical Society **25** (2010) 2 pp. 193–231, Arxiv: 0803.3865.

5. *The C*-algebra of symmetric words in two universal unitaries*
   M.-D. Choi, F. Latrémolière, Journal of Operator Theory **62** (2009) 1, pp. 159–169, ArXiv: math/0610467.

4. *C*-Crossed-Products by an order-two automorphism*
   M.-D. Choi, F. Latrémolière, Canadian Bulletin of Mathematics **53** (2010) 1, pp. 37–50, ArXiv: math/0610468.

3. *Crossed-products by conformal automorphisms of the closed disk*
   M.-D. Choi, F. Latrémolière, Houston Journal of Mathematics **36** (2010) 2, pp. 751–779, ArXiv: math/0511331.

2. *Bounded-Lipschitz distances on the state space of a C*-algebra*
   F. Latrémolière, Taiwanese Journal of Mathematics **11** (2007) 2, pp. 447–469, ArXiv: math/0510340.

1. *Approximation of the quantum tori by finite quantum tori for the quantum Gromov-Hausdorff distance*
   F. Latrémolière, Journal of Functional Analysis **223** (2005), pp. 365–395, ArXiv: math/0310214.

## Conferences Presentations

I have been a speaker at:

**2026** *Ulam Seminar*, University of Colorado, Boulder, invited professorship.

**2025** *North Atlantic NCG seminar*, invited speaker.

**2025** *West Coast Operator Algebra Symposium*, Pomona College, invited speaker.

**2024** *OdenSeaG*, Third North Sea noncommutativity geometry conference, Odense, DK, invited speaker.

**2024** *Mathematical Physics Seminar*, University of California , Riverside, invited speaker.

**2023** *Gravity, Noncommutative Geometry, Cosmology*, BIRS-CMO, invited speaker.

**2023** *Hausdorff School of Mathematics*, Hausdorff center of Mathematics, Bonn, Germany (invited lecturer for a minicourse)

**2023** *Mathematical Physics Seminar*, University of California, Riverside (invited speaker)

**2023** *Noncommutative Geometry: spectral and metric aspects*, (invited speaker), two presentations.

**2022** *Functional Analysis Seminar*, University of Colorado, Boulder (invited speaker)

**2022** *Analysis Seminar*, Washington University at Saint Louis, invited (online).

**2021** *Noncommutative Geometry and Topology seminar*, Institute of Mathematics of the Czech Academy of Sciences, invited speaker (online).

**2021** *Functional Analysis Seminar*, University of Colorado, Boulder, invited speaker.

**2021** *Operator Algebra Seminar*, University of Tokyo, invited speaker.

**2021** *North Atlantic Noncommutative Geometry Seminar*, online seminar, invited speaker.

**2021** *Mathematical Physics Seminar*, University of Nottingham, invited speaker.

**2021** *Mathematical Physics Seminar*, University of California, Riverside, invited speaker.

**2020** Invitations to give talks in Norway and China, cancelled due to Covid.

**2019** *The frontier of quantum dynamics*, IMPAN, Warsaw, plenary speaker.

**2019** *Fractal seminar*, University of California, Riverside, invited speaker.

**2019** *Colloquium*, University of Nevada, Reno, invited speaker.

**2019** *Workshop on new geometry of quantum dynamics*, Fields institute, University of Toronto, invited speaker.

**2019** *Mathematical Physics and Dynamical Systems Seminar*, University of California, Riverside, invited speaker.

**2018** *Tokyo Operator Algebra Seminar*, University of Tokyo, sponsored speaker.

**2018** *Kyoto Operator Algebra Seminar*, RIMS, University of Kytoto, sponsored speaker.

**2018** *Functional Analysis seminar*, Arizona State University, invited speaker.

**2018** *Special Quantum Metric Geometry seminar*, University of California at Berkeley, invited speaker.

**2018** *Mathematical Physics and Dynamical Systems Seminar*, University of California, Riverside, invited speaker.

**2018** *New Geometry conference*, Mathematics Institute of the Polish Academy of Science, plenary speaker

**2017** *Special Session, Operator Algebras*, AMS Southeastern Sectional meeting, Orlando, invited speaker.

**2017** *Noncommutative Geometry Seminar*, Caltech, invited speaker

**2017** *Fractal Geometry Seminar*, University of California, Riverside, invited speaker.

**2017** *Mathematical Physics and Dynamical Systems Seminar*, University of California, Riverside, invited speaker.

**2017** *Functional Analysis Seminar*, Dartmouth College, Shapiro visitor.

**2016** *Noncommutative Geometry Seminar*, Caltech, invited speaker,

**2015** *Noncommutative Geometry and Spectral Invariants*, Université du Québec at Montréal, Invited speaker,

**2015** *Analysis Seminar*, University of Colorado, Boulder,

**2014** *Journée transport optimal*, Noncommutative Network conference, Invited speaker, Besançon, France.

**2014** *East Coast Operator Algebra Seminar*, Invited speaker, Fields Institute, Ontario, Canada

**2013** *Great Plain Operator Theory Symposium*, contributed talk, University of California, Berkeley

**2013** *AMS Spring Western section Meeting*, invited speaker, University of Colorado, Boulder

**2013** *Colloquium*, invited speaker, University of Wyoming

**2012** *West Coast Operator Seminar*, Plenary speaker, University of Oregon.

**2012** *GPOTS*, contributed talk, University of Houston

**2011** *AMS Fall Central Section Meeting*, invited speaker, University of Nebraska, Lincoln
special session "Recent progress in Operator Algebras"

**2011** *CMS Summer meeting*, invited speaker, University of Alberta, Edmonton
session "Operator Algebras"

**2010** *GPOTS Workshop*, invited speaker, University of Colorado, Boulder

**2006** *Colloquium*, invited speaker, Kansas State University

**2006** *AMS Fall Central Section Meeting*, invited speaker, University of Cincinnati
special session "Operator Algebras"

**2006** *GPOTS*, contributed talk, University of Iowa

**2004** *AMS Spring Eastern Section Meeting*, invited speaker,
special session "Metric Geometry"

**2004** *Colloquium*, invited speaker, University of Nevada, Reno

**2003** *West Coast Operator Algebra Seminar*, plenary speaker, BIRS, Banff

## Teaching

### Junior, Senior and Graduate Level

Functional Analysis, Measure Theory, Topology, Introduction to Real Analysis, Real Analysis II, Spectral Theory and C*-algebras, Complex Analysis, Advanced Linear Algebra, Riemannian geometry.

### Freshman and Sophomore Level

Calculus 1, Calculus 2, Calculus 3, Honors Calculus 2, Honors Calculus 3, Mathematical Probability, Elements of Linear algebra.

### General Audience Level

First year seminar, Mathematics Foundation / Analytical Inquiry 1.

## Industry Grants

1. 2024: Lockheed-Martin research grant: application of AI techniques to computational fluid dynamics
2. 2022: Lockheed-Martin research grant: application of AI techniques to detection of anomalies; associated paper: arXiv:2204.00523.

## Grants and Awards

### Award

*Excellence in Research 2021* prize, College of Natural Sciences and Mathematics, University of Denver.

### External

**Lockheed Martin** Grant for Time Series Analysis and Machine Learning, PI, (2024).

**Lockheed Martin** Grant for Time Series Analysis and Machine Learning, PI, (2022).

**EU RISE Grant** Node coordinator (P.I. : Piotr Hajac).

**NSF Grant** P.I. for NSF Grant DMS 0852495: joint grant with the University of Colorado, Boulder for the organization of GPOTS 2009 and 2010 (7/1/2009–3/31/2014)

**NSF Grant** P.I. for NSF Grant DMS 1445373 to organize the West Coast Operator Algebra Seminar in 2014 (8/15/2014–7/31/2015)

### Internal

**PROF Grant** Co-PI for a grant from the University of Denver (PROF Grant) for high performance computing on the CUDA architecture. (completed)

**PROF Grant** P.I. for internal grant ($ 20000) as seed money for my research in quantum metric geometry. (7/1/2013–6/30/2017)

## *Service*

### Professional

- Organizer of a special session, AMS-MAA joint meeting at Denver, 2020.
- Organizer of a special session, AMS Fall Western Sectional Meeting at the State Universiy at San Francisco, 2018.
- Organizer of a special session, AMS Fall Western Sectional Meeting at the University of Denver, 2016.
- Organizer for **West Coast Operator Algebra 2014** at the University of Denver (NSF Supported)
- Lead organizer for **Great Plain Operator Theory Symposium 2010** at the University of Denver (NSF supported)
- Referee for many mathematics journals, including *Advances in Mathematics*, *Journal of Functional Analysis*, *Journal of Mathematical Analysis and Applications*, *Journal of Operator Theory*, *Integral Equations and Operator Theory*, *Memoirs of the American Mathematical Society*, *European Journal of Noncommutative Geometry*, *Expositiones Math.*, *SIGMA*, *Collectenae math*, *Studia Math*, *Science China*, *Results in Mathematics*.

### Academic

- Postdoctoral Mentor for *Zhe Liu* (Ph.D. 2010, New Hampshire), 2012–2013.
- Ph.D. thesis advisor of *Konrad Aguilar* (PhD in 2017, now postdoctoral research scholar at ASU)
- Member of the Ph.D. dissertation committee for 5 students at DU, 3 students at CU Boulder, and 1 student at U. of Wollongong.
- Academic advisor for first year undergraduate students in 2008–2010 and 2011–2019, in groups of fifteen to eighteen per year, as part of the FSEM program at the University of Denver.

- Major advisor in Mathematics since 2008 (more than ten students per year)
- Graduate advisor for incoming graduate students at the rate of one to two a year.

### University Committees

**2012–2015** Faculty Senate Representative, Faculty Senate, University of Denver. Elected as representative for the Department of Mathematics (3 years term). Member of the Finance Committee.

### Division Committees

**2008–2014** Chair of the IT Committee for the division of Natural Sciences and Mathematics (NSM).

**2007–2014** Representative of the Department of Mathematics at the IT Committee for NSM.

**2008-2010** Member of the NSM/University Technology Services university committee.

### Departmental Committees

**2023–2026** Math Center Coordinator

**2023–2024** Chair of Dr. Yin promotion committee

**2023–2024** Member of Dr. Horn promotion committee

**2023–2024** Member of Dr. Schaffer-Fry promotion committee

**2018-2019** Chair of new AI degree committee

**2018** Chair of tenure and promotion committee of Dr. Yin

**2012–2016** Undergraduate Coordinator and Undergraduate Committee chair

**2010-2013** Analysis Ph.D. preliminary Examination Committee chair

**2008-2011** Graduate Studies committee

**2009,2010,2012** Member of several hiring committees for tenure-track positions in Mathematics.

**2012, 2014, 2015** Member of postdoc hiring committees.

## *Computer Skills*

**Systems** Linux (Debian), Unix (BSD, AIX), Windows.

**Languages** C,C++,Java,Javascript,Python 3,Common Lisp,Scheme,Forth,Pascal,Fortran,Prolog, x86 assembler, rudiments of Haskell.

**Web** HTML, Javascript DOM, XML, XSLT, CSS, PHP, CGI programming in C/C++

**Software** SAS Analytics, Latex, Emacs, Eclipse, Netbeans, Mathematica, Libre Office (including Java/UNO interface), MsOffice.

**Other** GPU programming: CUDA, OpenGL 3.x, 4.x; Tensorflow 2.7.

## Languages

**French** Native.

**English** Fluent.

**German** Reading and writing knowledge.

**Latin** Foundation.