Damien Tageddine

Curriculum Vitae

Department of Mathematics and Statistics
McGill University, CA
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Research Interests

Broad	noncommutative geometry, mathematical-physics, numerical analysis
Specific	noncommutative harmonic analysis, noncommutative differential operators, p-adic rigid analysis, Berkovich spaces, structure-preserving discretizations

Employment

2024–present	**Postdoctoral Researcher**.
	Department of Mathematics and Statistics | McGill University | Montréal, QC CA

Research Invitation

2025	**Visit to Prof. Masoud Khalkhali**.
	Department of Mathematics and Statistics | Western University | London, ON CA

Education

2018–2024	**Doctor of Philosophy**, Mathematics, McGill University.
	Thesis : Noncommutative Differential Geometry and Infinitesimal Spaces
	Advisor : Prof. Jean-Christophe Nave | Date of defense : 4th July 2023
2017-2018	**Master of Science**, Applied Mathematics.
	École Polytechnique de Montréal
2014–2017	**Bachelor of Engineering**, Engineering Physics.
	École Polytechnique de Montréal
2010–2013	**Classes Préparatoires aux Grandes Écoles**, Major in Mathematics (MPSI/MP).
	Louis-Le-Grand, Paris, France

Publications and Preprints

7) **Noncommutative Laplacian and numerical approximation of Laplace-Beltrami spectrum of compact Riemann surfaces**, *joint with J-C. Nave*, submitted (2025), arXiv :2510.09909.

6) **Noncommutative geometry on the Berkovich projective line**, *joint with M. Khalkhali*, Journal of Fractal Geometry (2025), doi 10.4171/JFG/167.

5) **Structure preserving discretization : A Berezin-Toeplitz Quantization viewpoint**, *joint with J-C. Nave*, submitted (2025), arXiv :2411.01085.

4) **Statistical Fluctuation of Infinitesimal Spaces**, *joint with J-C. Nave*, submitted, passed 1st round of revisions (2025), arXiv :2304.10617.

3) **Noncommutative Differential Geometry on Infinitesimal Spaces**, *joint with J-C. Nave*, Annales Mathématiques du Québec (2025), https ://doi.org/10.1007/s40316-025-00264-9.

2) **Noncommutative differential geometry and infinitesimal spaces**, PhD Thesis, McGill University (2024).

1) **A 3-D Numerical Modeling for the Magneti- zation of Superconductors Using a Local Discontinuous Galerkin Finite Method**, *joint with Y-M. Law, S. Dufour*, IEEE Transactions on Magnetics, **55**, no. **8** (2019).

Supervision

Summer 2025   **Valentin Mansuy**, McGill University.
Title : Noncommutative Laplace-Beltrami operator and Ricci curvature on compact surfaces

Summer 2024   **Louis Menier**, McGill University.
Title : Discrete variational complex with arbitrary finite difference schemes

Summer 2023   **Armen Chahmirian**, McGill University.
Dirac operators on triangulations

Summer 2021   **William Holman-Bissegger**, McGill University.
On the discrete Leibniz rule

Summer 2019   **Yuki Zhang**, McGill University.
Introduction to the Multiplier Method via the N-Bodies Problem.

Teaching Experience

Fall, 2024   **Lecturer**, McGill University.
Calculus III

Winter, 2024   **Lecturer**, McGill University.
ODE for Engineers

Fall, 2023   **Lecturer**, McGill University.
Calculus II

Winter, 2022   **Teaching Assistant**, McGill University.
Honours Ordinary Differential Equations

Winter, 2021   **Teaching Assistant**, McGill University.
Honours Analysis II

Fall, 2019   **Teaching Assistant**, McGill University.

Winter, 2018   **Lecturer**, École Polytechnique de Montréal.

Winter, 2017   **Lecturer**, École Polytechnique de Montréal.

Seminar Organisation

2019-2024   **CRM Applied Mathematics Seminar**.
McGill University, with Prs. J-P Lessard (McGill), T. Hoheisel (McGill), S. Brugiapaglia (Concordia)

2019-2021   **McGill Graduate Students Seminar**.
McGill University

Service and Outreach

Reviewer.
Journal of Foundation of Computational Mathematics (FoCM)

Letter of recommendation.
Nomination of Prof. Niky Kamran for Thomson Award (McGill University)

Mentoring.
The Peer Advising Desk at McGill University

Discussion clubs.
Participant in the Math Equity Discussion Club (McGill University)

Fellowships, Scholarships & Distinctions

2023   **Alexis and Charles Pelletier Fellowships in Mathematics**.

2022   **ISM Scholarship for Outstanding PhD Candidate**.

2019-2021 **ISM Graduate Scholarship**.

2019 **Graduate Excellence Awards**.
McGill University

Scientific Communications

June 2025 **NSF-CBMS Conference**, St John's University, New-York US.
Title : *Noncommutative Geometry of $\mathrm{PGL}(2, \mathbb{C}_p)$ and the Berkovich line*

May 2025 **BIMSA-Tsinghua Quantum Symmetry Seminar**, Beijing Institute of Mathematical Sciences and Applications, Beijing, CHN.
Title : *Noncommutative geometry of $\mathrm{PGL}(2, \mathbb{C}_p)$ and KMS states*

March 2025 **Global Noncommutative Geometry Seminar**, Online.
Title : *Noncommutative Harmonic Analysis on $\mathrm{PGL}(2, \mathbb{C}_p)$*

Dec. 2024 **NYC Noncommutative Geometry Seminar**, St John's University, New-York US.
Title : *Noncommutative Geometry on the Berkovich line*

July 2024 **SIAM Annual Meeting**, Spokane, US.
Title : *A candidate framework for structure-preserving discretizations*

Feb. 2024 **Journée IRL CRM-CNRS**, Université de Montréal, CA.
Title : *La déformation par quantification de Berezin est une théorie de la discrétization*

Dec. 2023 **Workshop in Noncommutative Geometry**, Fields Institute, Toronto, CA.
Title : *Spectral triples on the Berkovich line*

June 2023 **Foundation of Computational Mathematics Conference**, Sorbonne Université, Paris, FR.
Title : *Noncommutative differential geometry and discrete spaces*

June 2023 **Canadian Mathematical Society (CMS) Conference**, Ottawa University, Ottawa CA.
Title : *Noncommutative differential geometry on discrete spaces*

May 2023 **Canadian Operator Symposium 2023**, University of Western Ontario, London CA.
Title : *On Sequences of Spectral Triples Associated to Triangulations and Their Convergence*

Nov. 2022 **Geometry and Algebra Seminar**, University of Toronto, Toronto CA.
Title : *Noncommutative differential geometry on infinitesimal spaces*

June 2022 **Canadian Applied and Industrial Mathematics Society (CAIMS) Conference**, University of British Colombia, Vancouver, CA.
Title : *From Representation Theory to Geometrical Discretizations*

March 2021 **Centre Interuniversitaire de Recherche en Géométrie et Topologie**, Université du Québec à Montréal, Montréal, CA.
Title : *Noncommutative Differential Geometry of Matrix Algebras*

Relevant Skills and Qualifications

Languages **French** (native), **English** (CAE Grade A : level C2), **Spanish** (intermediate), **Arabic** (intermediate), **Wolof** (intermediate).

Programming **LateX** (high level), **Matlab** (high level), **Fortran90** (high level), Julia (intermediate), **Python** and Softwares (intermediate), **C** (intermediate), **C++** (familiarity).

Other Research Experience

2016-2017 **Détermination et propagation d'orbites de satellites**, Canadian Spacial Agency.
Advisor : Nicolas Godbout, École Polytechnique Montréal

2016 **Méthode d'analyse non-normale appliquée à l'étude de stabilité d'écoulements en fusion par confinement inertiel**, Commissariat à l'Énergie Atomique, Paris, Saclay.
Advisor : J-M Clarisse, Expert CEA