Dr. Damien Tageddine

Contact Information

Department of Mathematics and Statistics
McGill University
850 Sherbrooke Street West
Montréal, Québec
H3A 2K6 CANADA
(514) 562 4200

damien.tageddine@mail.mcgill.ca

Research Interests

My research interests can be described by the broad framework of (quantized) geometry with respect to a small parameter $\hbar$. Specifically, I work on building bridges between noncommutative differential geometry, deformation quantization and C^*-algebras on one hand, and finite dimensional approximations of differential operators and of algebraic structures on the other hand. I'm also interested in topics that have close links with mathematical physics.

Website

https://math.mcgill.ca/dtagedine/

Professional experience

Lecturer, McGill University (since September 2023)
Department of Mathematics and Statistics

Education

McGill University

Ph.D. in Mathematics (defended in August 2023)

- Thesis title: Noncommutative Differential Geometry and Infinitesimal Spaces
- Advisor: Prof. Jean-Christophe Nave

École Polytechnique de Montréal

M.Sc. in Applied Mathematics, August 2018
B.A. in Engineering Physics, May 2017

Classes Préparatoires du Lycée Louis-Le-Grand

Classes de Mathématiques Spéciales (MP), 2011-2013
Classes de Mathématiques Supérieures (MPSI), 2010-2011

Publications, preprints, and thesis

D. Tageddine, J-C. Nave, *Structure Preserving Discretizations: a Berezin-Toeplitz Quantization Viewpoint,* preprint (November 2024), arXiv:2411.01085.

M. Khalkhali, D. Tageddine, *Noncommutative Geometry on the Berkovich Projective Line,* preprint (November 2024), arXiv:2411.02593.

D. Tageddine, *Noncommutative Differential Geometry and Infinitesimal Spaces,* PhD's Thesis, (2023).

D. Tageddine, J-C. Nave, *Statistical Fluctuation of Infinitesimal Spaces,* submitted, arXiv:2304.10617, submitted.

D. Tageddine, J-C. Nave, *Noncommutative Differential Geometry on Infinitesimal Spaces,* submitted, arXiv:2209.12929, submitted.

Y-M. Law, D. Tageddine, S. Dufour, *A 3-D Numerical Modeling for the Magnetization of Superconductors Using a Local Discontinuous Galerkin Finite Method,* submitted to IEEE Transactions on Magnetics (2018).

D. Tageddine, *Conception d'un schéma adaptatif d'intégration en temps appliqué à la discrétisation par éléments finis des équations de Maxwell pour l'étude de la supraconductivité,* Master's Thesis (2018).

Scientific communications

A candidate framework for structure-preserving discretizations, SIAM Annual Meeting, Spokane, U.S. (July 2024)

La déformation par quantification de Berezin est une théorie de discrétization, Journée International Research Lab (IRL) CRM-CNRS, Université de Montréal, Canada. (February 2024)

Spectral triples on the Berkovich line, Workshop in Noncommutative Geometry, Fields Institute, Canada. (December 2023)

Noncommutative differential geometry and discrete spaces, Foundation of Computational Mathematics (FoCM), Sorbonne Université, France. (June 2023)

Noncommutative differential geometry on discrete spaces, Canadian Mathematical Society (CMS), Ottawa University, Canada. (June 2023)

On Sequences of Spectral Triples Associated to Triangulations and Their Convergence, Canadian Operator Symposium 2023 (COsy 2023), University of Western Ontario, Canada. (May 2023)

Noncommutative differential geometry on infinitesimal spaces, Geometry and Algebra Seminar (GAS), University of Toronto, Canada. (November 2022)

From Representation Theory to Geometrical Discretizations, Canadian Applied and Industrial Mathematics Society (CAIMS), UBC, Canada. (June 2022)

Noncommutative Differential Geometry of Matrix Algebras, Centre Inter-universitaire de Recherche en Géométrie et Topologie (CIRGET), UQAM, Canada. (March 2021)

Resummation of the Moyal Product, Seminars in Algebra Geometry and Mathematical Physics, McGill University, Canada. (October 2020)

Teaching Experience

Fall	2024	Lecturer, Calculus 3
Winter	2024	Lecturer, ODE for Engineers
Fall	2023	Lecturer, Intermediate Calculus
Winter	2022	Teaching Assistant, Honours Ordinary Differential Equations
Winter	2021	Teaching Assistant, Honours Analysis 2
Fall	2019	Teaching Assistant, Calculus 1
Winter	2018	Lecturer, Calcul Scientifique pour Ingénieurs
Fall	2017	Lecturer, Calcul Scientifique pour Ingénieurs

Student Co-Supervision

Louis Menier. Discrete variational complex with arbitrary finite difference schemes. Internship at McGill University, Summer 2024. Co-supervised with Pr. J-C Nave.

Armen Chahmirian. Dirac operators on triangulations. Internship at McGill University, Summer 2023. Co-supervised with Pr. J-C Nave.

William Holman-Bissegger. Discrete Leibniz rule. Internship at McGill University, Summer 2021. Co-supervised with Pr. J-C Nave.

Yuki Zhang. Introduction to the Multiplier Method via the N-Bodies Problem. Internship at McGill University, Summer 2019. Co-supervised with Pr. J-C Nave.

Academic Activities

2019-2023	Co-organizer of the CRM Applied Mathematics Seminar, at McGill University, with Prs. J-P. Lessard (McGill), T. Hoheisel (McGill), S. Brugiapaglia (Concordia).
2019-2021	Organizer of the McGill Seminars for Graduate Students in Applied Mathematics.

Honors and Awards

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)
2015	Bourse d'Unité de Participation et d'Introduction à la Recherche (École Polytechnique de Montréal)

Undergrad Research Experiences

2016 - 2017	Détermination et propagation d'orbites de satellites . Advisor: Nicolas Godbout, Départment de Génie Physique, Canadian Spacial Agency.
2016	Méthode d'analyse non-normale appliquée à l'étude de stabilité d'écoulements en fusion par confinement inertiel. Advisor: J-M Clarisse, Expert CEA, Commissariat à l'Energie Atomique, Paris, Saclay.

Relevant Skills

Languages:	English, French
Programming:	Fortran90, C, Julia, Python, Matlab, LaTeX, WebWork