# Mohammad Hamdar

## Personal Information

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## Education

**Concordia University (as part of CICMA)**                  Montreal, Quebec
*PhD in Mathematics*                                         *Aug 2023 – Present*
Advisor: Chantal David

**American University of Beirut**                            Riad El Solh, Beirut
*Master of Science in Mathematics*                          *Aug 2019 – May 2021*
Thesis: The Riemann Hypothesis for Period Polynomials of Modular and Hilbert Modular Forms
Advisor: Wissam Raji

**Lebanese University**                                      Hadat, Beirut
*Bachelor of Science in Mathematics*                        *Oct 2016 –June 2019*

## Experience

**Teaching Assistant**                                       Montreal, Quebec
*Concordia University*                                       *Jan 2024 – Present*

**Research Assistant**                                       Riad El Solh, Beirut
*Department of Mathematics, American University of Beirut*   *Aug 2022 – July 2023*
Worked with Prof. Kamal Khuri-Makdisi on Modular symbols and Eisenstein series.

**Research Assistant**                                       Riad El Solh, Beirut
*Olayan School of Business, American University of Beirut*   *Aug 2021 – Feb 2022*
Worked with Prof. Victor Araman in Stochastic Modeling. In particular, we solved the problem of
sequentially testing of a Poisson process under a discounted Bayes risk.

**Graduate Teaching Assistant**                              Riad El Solh, Beirut
*American University of Beirut*                              *Aug 2019 – May 2021*

## Publications

- *Number of Rational Points of the Curve $y^{q^n} - y = \gamma x^{p^h+1} - \alpha$ over $\mathbb{F}_{q^m}$* (with Farzin Azar, Hasan Bilgili, Beyza Cepni, and Sercan Yılmaz), Report from the research group of the 2022 SuSAAN summer school

- *The Riemann Hypothesis for Period Polynomials of Modular and Hilbert Modular Forms*, Master Thesis, American University of Beirut ScholarWorks (2021)

- *An Econometric Approach to Assess the Impact of Negative Interest Rate Policy (NIRP) on Real Estate Price Inflation in the Eurozone* (with Bassam Hamdar and Yaman Skheita), Economics. Vol. 11, No. 1 (2022)

- *Economic and Technical Modeling of the Lebanese Crypto Currency: Implication for a Digital-Lira (DL)* (with Bassam Hamdar and Tarek Saad), International Journal of Business Administration, vol. 12, no. 2 (2021)

- *Economic Analysis of the Negative Interest Rate Policy (NIRP) on Asset Price Inflation: The Case of the Eurozone* (with Bassam Hamdar and Yamen Skheita), International Journal of Economics, Commerce and Management, vol. VIII, issue 10 (2020)

## Scholarships and Awards

* ISM scholarship for the 2024-2025 academic year from the Institut des sciences mathématiques at UQAM (Université du Québec à Montréal)

* Power Corporation of Canada Graduate Fellowship

* ISM scholarship for the 2023-2024 academic year from the Institut des sciences mathématiques at UQAM (Université du Québec à Montréal)

* Concordia University's Faculty of Arts and Science Graduate Fellowship, 2023-2027

* Concordia's International Tuition Award of Excellence

* Awarded the joint CIRM-CIMPA fellowship to attend the Thematic Month: 'Arithmetic and Information Theory' at the Centre International de Rencontres Mathématiques (CIRM), Jan-Mar 2023

* Full scholarship from the American University of Beirut to complete my Master of Science in Mathematics, 2019-2021

## Service and Professional Activities

**AUB-CIMPA Complex Analysis School**                        *5-16 June 2023*
*American University of Beirut*
Six mini-courses on topics in Several Complex Variables and Geometry with exercises

**SAGA School**                        *30 Jan- 3 Feb 2023*
*CIRM*
Four mini-courses on topics in Arithmetic Geometry with problem sessions

**Preliminary Arizona Winter School**                        *Oct-Nov 2022*
*Virtual Program*
Lecture series on "Heights in Diophantine Geometry" with problem sets

**Number Theory Research Unit**                        *Oct 2022*
*American University of Beirut*
Mini-course on "The Riemann Zeta Function: Conjectures and Computations"

**SuSAAN Summer School**                        *June 2022*
*Nesin Mathematics Village*
Research group+Course on Algorithmic Number Theory with exercise sessions using PARI/GP

**CAMS Thematic Program On Stochastic Modeling**                        *Nov 2021-Feb 2022*
*American University of Beirut*
Four short courses and seminars on Pricing and Revenue Management

**Lebanese National Science Fair**                        *Mar 2021*
*American University of Beirut*
Judge in the 26th Annual Science, Math and Technology Fair of Lebanon

## Conferences Attended

- *Analytic Number Theory and Arithmetic Statistics, A conference in honor of Chantal David*, Centre de recherches mathématiques, Montréal, Canada, August 2024

- *Canadian Number Theory Association XVI (CNTA XVI)*, Fields Institute, University of Toronto, Canada, June 2024

- *COUNT: COmputations and their Uses in Number Theory*, CIRM, Luminy-France, Mar 2023

- *ALCOCRYPT: ALgebraic and combinatorial methods for COding and CRYPTography*, CIRM, Luminy-France, Feb 2023

- *COGNAC: Conference On alGebraic varieties over fiNite fields and Algebraic geometry Codes*, CIRM, Luminy-France, Feb 2023

- *SAGA: Symposium on Arithmetic Geometry and its Applications*, CIRM, Luminy-France, Feb 2023

- *LICMA'17: Lebanese International Conference on Mathematics and Applications*, Lebanese University, Beirut-Lebanon, May 2017

## Talks

### Expository

- *Fourier Analysis on Finite Groups and Heisenberg Uncertainity Principles*, Concordia, April 2024

- *Modularity, Level Lowering, and the proof of Fermat's Last Theorem*, Universite de Montreal, April 2024

- *Hecke L-functions: Functional Equation and Analytic Continuation*, McGill, December 2023

- *Dobrowolski's lower bound for heights of algebraic numbers*, Concordia, December 2023

### Research

- *Counting Rational Points on Supersingular Curves*, Nesin Mathematics Village, June 17, 2022

- *The Riemann Hypothesis for Period Polynomials of Classical and Hilbert Modular Forms*, American University of Beirut, April 27, 2021

## Teaching

**Teaching Assistant**                                          Montreal, Canada
*Concordia University*                                         *Jan 2024 – Present*

- Math 201: Elementary Functions and Trigonometry (Tutorial, Winter 2024)

**Math Instructor**                                                Austin, Texas
*Upswing*                                                  *Sep 2022 – August 2023*

Subjects: Calculus (I, II, and III), Algebra, Differential Equations, Probability

**Teaching Assistant**                                        Riad El Solh, Beirut
*American University of Beirut*                                 *Aug 2019 – May 2021*

- Math 209: Linear Algebra (Grader, Spring 2020)

- Math 210: Introduction to Analysis (Grader, Fall 2019 and Spring 2021)

- Math 304: Graduate Complex Analysis (Grader, Fall 2020)

- Tutor in the AUB Math Clinic

## Skills

**Languages:** Arabic (Native), English (Proficient), French (Basic).

**Computer Skills:** PARI/GP and LaTeX.