Allan Merino | Curriculum Vitae

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Employment History

Assistant Teaching Professor   **August 2023 - Present**
Simmons University, Boston

Postdoctoral Fellow   **July 2021 - June 2023**
University of Ottawa, Canada
Supervisor: ***Hadi Salmasian***

Research Fellow   **April 2018 - April 2021**
National University of Singapore
Supervisor: ***Hung Yean Loke***

Teaching and Research Assistant   **September 2016 – March 2018**
Polytech Nancy (Engineering School), France

Education

PhD in Pure Mathematics   **October 2013 – December 2017**
University of Lorraine, France

- Title: *Characters of Unitary Highest Weight Representations via Howe Correspondence and Rossmann-Duflo-Vergne formula*
- Supervisors: ***Angela Pasquale*** and ***Tomasz Przebinda***

MSc in Pure Mathematics   **2011 – 2013**
University of Lorraine, France

- Title: *A new construction of the Weil representation*
- Supervisor: ***Angela Pasquale***

BSc in Mathematics   **2008 – 2011**
University Paul Verlaine, France

Research Activities

Research Interests

Representation theory of real reductive groups, Character theory, Howe correspondence, Lie superalgebras and supergroups, Character varieties.

Publications

- Characters of Unitary Highest Weight Representations via Howe Correspondence and Rossmann-Duflo-Vergne formula, **PhD Thesis**
- Characters of some unitary highest weight representations via the theta correspondence, **Journal of Functional Analysis**, Volume 279, Issue 8, November 2020
- Transfer of characters in the theta correspondence with one compact member, **Journal of Lie Theory**, 2020, no. 4, 997-1026
- Dual pairs in the Pin-group and duality for the corresponding spinorial representation, joint work with C. Guérin and G. Liu, **Algebras and Representation Theory**, Volume 24, Issue 6, December 2021
- Characters of irreducible unitary representations of U(n, n+1) via double lifting from U(1), **Representation Theory** 26 (2022), 325-369
- Transfer of characters for discrete series representations of the unitary groups in the equal rank case via the Cauchy–Harish-Chandra integral, **International Mathematics Research Notices**, Volume 2023, Issue 8, April 2023, Pages 6845–6900

Preprints

- Classification and double commutant property for dual pairs in an orthosymplectic Lie supergroup (with Hadi Salmasian, **ArXiV**)
- Howe duality for the dual pair $(\mathrm{SpO}(2n|1), \mathfrak{osp}(2k|2l))$

Teaching Experience

MAT 1741 - Introduction to linear algebra   **Winter 2023**
University of Ottawa, Canada   *Undergraduate course*

- Sole Lecturer - Introduction to Linear Algebra
- In-person course with 120 students. Three hours of lecture per week, during 12 weeks
- Developed a syllabus, writing homeworks, midterms and final examinations
- Lecture notes: 110 pages & a 50 pages long file containing the correction of exercices
- Teaching evaluation: 4.33/5 (Evaluation made by 60 students)

MAT 2742 - Applied linear algebra   **Fall 2022**
University of Ottawa, Canada   *Undergraduate course*

- Sole Lecturer - Applied linear algebra (in French)
- In-person course with 70 students. Three hours of lecture per week, during 12 weeks
- Developed a syllabus, writing homeworks, midterms and final examinations
- Lecture notes: 90 pages
- Teaching evaluation: 4.45/5 (Evaluation made by 19 students)

MAT 2525 - Elementary Real Analysis   **Winter 2022**
University of Ottawa   *Undergraduate course*

- Sole Lecturer - Elementary Real Analysis (in French)
- Online Course with 100 students. Three hours of lecture per week, during 12 weeks
- Developed a syllabus, writing homeworks, midterms and final examinations
- Lecture notes: 90 pages & a 30 pages long file containing the correction of exercices
- Teaching evaluation: 4.57/5 (Evaluation made by 30 students)

MA 6292 - Characters of quasi-simple representations   **Winter 2020**
National University of Singapore   *Advances Graduate Course*

- Sole lecturer - Character of quasi-simple representations
- Create a course on characters for graduate students containing open problems to work on in the future
- Final exam: one hour individual oral presentation
- Lecture notes: 100 pages

Teaching Assistant   **2016 - 2018**
Polytech Nancy (Engineering School), France

- Teaching assistant for first and second year students, in Calculus (2 semesters), ODE & Fourier Analysis (2 semesters), Linear Algebra (2 semesters)

Teaching Assistant   **2014-2016**
University of Lorraine, France

Teaching assistant in a variety of courses:

- Exercise sessions in Statistics for first year students in Economy, second year engineering students and master students in Mathematics
- Sole lecturer: Introduction to Latex for second year students in Mathematics
- Oral Examinations for undergraduate students (Linear Algebra, Bilinear Algebra, Group Theory, Calculus, ODE, Probability, Differential Calculus, Complex Analysis, Measure Theory)
- Refresher course in Group and Ring theory and Probability for third year students (20 hours)

Seminar and Conference Talks

Shanghai Jiao Tong University, China   **December 2022**
Winter Young Mathematician Forum (Online)
- Howe duality and characters

New York University, Abu Dhabi, UAE   **November 2022**
Geometry, Topology and Algebra seminar (Online)
- Classification and double commutant property for dual pairs in an orthosymplectic Lie supergroup

Paderborn, Germany   **October 2022**
Geometric and Harmonic Analysis seminar (Online)
- Classification and double commutant property for dual pairs in an orthosymplectic Lie supergroup

Prague, Czech Republic   **October 2022**
Seminar on Harmonic Analysis (Online)
- Classification and double commutant property for dual pairs in an orthosymplectic Lie supergroup

University of Ottawa, Canada   **August 2022**
Workshop on Symmetric Spaces, Their Generalizations, and Special Functions
- Classification and double commutant property for dual pairs in an orthosymplectic Lie supergroup

IMS, Singapore   **July 2022**
Representations and Characters: Revisiting the Works of Harish-Chandra and André Weil
- Dual pairs in an Orthosymplectic Lie supergroup, double commutant theorem and duality

University of Ottawa, Canada   **March 2022**
Ottawa-Carleton joint Algebra seminar
- Character Varieties of classical groups

University of Ottawa, Canada   **October 2021**
Ottawa-Carleton joint Algebra seminar
- Schur Duality, Pin Duality and Lie superalgebras

Louisiana State University, USA — **October 2021**
Harmonic Analysis seminar (Online)
- Howe duality and characters (2 talks)

Queen's University, Canada — **October 2021**
Algebra & Geometry seminar (Online)
- Transfer of characters in the theta correspondence

National University of Singapore, Singapore — **March 2021**
Representation Theory & Number Theory seminar
- Transfer of characters for discrete series representations in the equal rank case via the Cauchy-Harish-Chandra integral (2 parts)

University of Ottawa, Canada — **December 2020**
Ottawa-Carleton joint Algebra seminar (Online)
- Transfer of characters for discrete series representations in the equal rank case via the Cauchy-Harish-Chandra integral

Technion (Israel Institute of Technology), Israel — **October 2020**
Algebra seminar (Online)
- Transfer of characters in the theta correspondence

University of Lorraine, France — **October 2020**
LieGA Seminar (Online)
- Transfer of characters for discrete series representations in the equal rank case via the Cauchy-Harish-Chandra integral

University of Oklahoma, USA — **October 2019**
Colloquium
- Duality for the Pin Representation

National University of Singapore, Singapore — **November 2018**
Representation Theory & Number Theory seminar
- Invariant Theory and Lie Supergroups (2 parts)

National University of Singapore, Singapore — **September 2018**
Representation theory & Number theory seminar
- Characters in the theta correspondence (4 parts)

National University of Singapore, Singapore — **May 2018**
Representation Theory & Number Theory seminar
- Characters of representations of non-compact reductive Lie groups via the theta correspondence

University of Lorraine, France — **November 2017**
Workshop SL2R
- Characters of representations of non-compact reductive Lie groups via the theta correspondence

University of Lorraine, France — **November 2016**
Graduate Student Seminar
- Nilpotent Gelfand Pairs

University of Lorraine, France — **November 2015**
Graduate Student Seminar
- Howe's Duality Theorem: a Proof in the Archimedian Case

University of Lorraine, France — **April 2015**
Graduate Student Seminar
- Representations of the Symmetric Group, Schur Duality and Howe Duality

o **University of Lorraine, France**   **September 2014**
Graduate Student Seminar
- Lie Superalgebras and their Representations

Conferences Attended

o **IMS, Singapore**   **December 2018 - January 2019**
On the Langlands program: endoscopy and beyond

o **Mahdia, Tunisia**   **December 2017**
Fifth Tunisian-Japanese conference   *(Invited)*

o **University of Reims, France**   **June 2017**
Conference in honor of Alexander Kirillov   *(invited)*

o **Atlanta, USA**   **January 2017**
AMS-MMA Joint mathematics meetings   *(Invited)*

o **University of Erlangen-Nuremberg, Germany**   **September 2016**
Seminar Sophus Lie   *(Invited)*

o **CIRM, Marseille, France**   **March 2015**
Analysis and geometry of resonances   *(Invited)*

Service

o **Referee activities**   **2020 – Present**
Journal of Pure and Applied Algebra, International Mathematics Research Notices

o **University of Ottawa**   **2021-2022**
Organizer of a reading group on Howe duality for Lie superalgebras

o **Singapore**   **2020**
Jury for the Singapore Science & Engineering Fair (SSEF)

o **University of Lorraine (Metz)**   **2014–2017**
Member of the Mathematics Department Council, University of Lorraine

o **MATh.en.JEANS**   **2014–2016**
Proposition of research projects for high school students (France)

o **Institut Élie Cartan de Lorraine, Metz**   **2013–2016**
Organizer of the Graduate Student Seminar

Languages

French (native), English (fluent), Spanish (good knowledge)

Technical Skills

LaTeX, Matlab, Python, R, SQL

Awards

Junior Excellence in Mathematics Teaching Award (University of Ottawa, December 2022)