JENNIFER JOHNSON-LEUNG
DEPARTMENT OF MATHEMATICS AND STATISTICAL SCIENCE
UNIVERSITY OF IDAHO, MOSCOW, ID
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Education

PhD., Mathematics, California Institute of Technology 2005
Thesis: Artin L-series for abelian extensions of imaginary quadratic fields.
Advisor: Matthias Flach
PhD. Minor in Chemistry

B.S., Chemistry and Mathematics, College of William and Mary 1998
Summa Cum Laude with High Honors in Chemistry

Employment

Associate Professor, Department of Mathematics, University of Idaho 2016–
Assistant Professor, Department of Mathematics, University of Idaho 2007–2016
Lecturer, Department of Mathematics, Brandeis University 2005–2007

Research Interests

- Arithmetic Geometry and Number Theory, Siegel Modular Forms with Paramodular Level, Representations of GSp(4)
- Special Values of L-functions, Iwasawa Theory, Abelian Surfaces
- Fourier expansions of quaternionic modular forms
- Network Epidemiology, Topological Data Analysis, Public Health

Papers

- Johnson-Leung J, McGlade F, Negrini I, Pollack A, Roy, M. *The quaternionic Maass Spezialschar on split SO(8)* arXiv preprint (submitted) arXiv:2401.15277 (2024).
- Dilshani Sarathchandra and Jennifer Johnson-Leung. *Influence of Political Ideology and Media on Vaccination Intention in the Early Stages of the COVID-19 Pandemic in the United States* (Submitted - 2023)
- Jennifer Johnson-Leung, Joshua Parker, Brooks Roberts. *The paramodular Hecke algebra* arXiv preprint (submitted) arXiv:2310.13179 (2023)
- Seamon E, Ridenhour BJ, Miller CR, Johnson-Leung J. *Spatial Modeling of Sociodemographic Risk for COVID-19 Mortality* preprint (submitted) DOI:10.1101/2023.07.21.23292785 (2023)
- Moxley T, Johnson-Leung J, Seamon E, Williams C, Ridenhour BJ *Application of Elastic Net Regression for Modeling COVID-19 Sociodemographic Risk Factors* PLoS ONE 19(1): e0297065 (2024)
- Jennifer Johnson-Leung, Brooks Roberts, Ralf Schmidt *Stable Klingen Vectors and Paramodular Newforms* Springer Lecture Notes in Mathematics, Volume 2342. (2023)
- Ridenhour BJ, Sarathchandra D, Seamon E, Brown H, Leung F-Y, Johnson-Leon M, Megheib M, Miller CR, Johnson-Leung J. *Effects of trust, risk perception, and health behavior on COVID-19 disease burden: Evidence from a multi-state US survey.* PLoS ONE 17(5): e0268302. (2022) [Project Lead]
- Jennifer Johnson-Leung and Brooks Roberts, *Twisting of Siegel Paramodular Forms,* Int. J. Number Theory, 13 pp. 1755-1854 (2017) 1755–1854
- Jennifer Johnson-Leung and Brooks Roberts *Fourier Coefficients for Twists of Siegel Paramodular Forms,* J. Ramanujuan Math Soc. 32, (2017) 101–119

- Yopp, D., Ely, R., & Johnson-Leung, J. *Generic Example Proving Criteria for All,* For the Learning of Mathematics **35** 3 (2015) 8–13
- Jennifer Johnson-Leung and Brooks Roberts, *Twisting of Paramodular Vectors,* Int. J. Number Theory 10, (2014) 1043 – 1065
- Jennifer Johnson-Leung *The local equivariant Tamagawa number conjecture for almost abelian extensions* in WIN 2 Women in Numbers 2: Research Directions in Number Theory, Contemporary Mathematics, vol 606, (2013) 1 – 27
- Jennifer Johnson-Leung and Brooks Roberts, *Siegel modular forms of degree two attached to Hilbert modular forms,* Journal of Number Theory 132 (2012) 543 – 564
- Jennifer Johnson-Leung and Guido Kings, *On the equivariant main conjecture for imaginary quadratic fields*, J. reine angew. Math. 653 (2011), 75 – 114
- H. Grundman, J. Johnson-Leung, K. Lauter, A. Salerno, B. Viray, and E. Wittenborn, *Igusa Class Polynomials, Quartic CM Fields, and Arithmetic Intersection Theory.*, in WIN– Women in Numbers: Research Directions in Number Theory, Fields Institute Communications Series, Volume 60 (2011)

Other Works

- Buow, Johnson-Leung, Newton, and Ozman, Eds. Women in Numbers Europe 2, Proceedings volume, Springer, 2018.
- *Hyperelliptic Threshold Noise* Essay and Exhibition at the Pritchard Art Gallery, Moscow, Idaho, 2016
- *Artin L-series for abelian extensions of imaginary quadratic fields*, Dissertation, California Institute of Technology (2005)

Grants

AIM SQuARe (New Directions in Quaternionic Modular Forms)	2023
NIH Supplement for COVID modeling (co-Director)	2020
Renfrew Faculty Fellowship	2020
Micron Gift funding a GEAR UP summer camp on proportional reasoning	2017
NSF MSP Grant (Co-PI) (Making Mathematical Reasoning Explicit)	2011
NSA Young Investigators Award (Special values of L-functions and motivic elements for abelian surfaces with complex multiplication)	2010
UI Seed Grant (Special Values of L-functions of CM Fields)	2008

PhD Students

Nina Rupert, *An explicit theta lift from Hilbert to Siegel paramodular forms*	2017
Daniel Reiss, *Arithmetic relations between Fourier coefficients of Siegel paramodular forms*	2019
Joshua Parker, *Prime level paramodular Hecke algebras*	2022
Jordan Hardy, *CM abelian surfaces with non-principal polarizations*	expected 2023

Undergraduate Research Students

Beau Horenberger	2019
Kirk Bonney	2020
Trevor Griffin	2021
Katie Theissen	2023

Selected Presentations

PRiME Colloquium, Pomona College "Fourier Coefficients of Modular Forms and Arithmetic"	July 2023
Joint Mathematics Meeting Special Session on Women in Automorphic Forms "Stable Kingen Vectors and Paramodular Newforms"	January 2023
Texas Tech Algebra and Number Theory Seminar "Stable Klingen subgroups and paramodular forms of deep level"	November 2022
University of Idaho Mathematics Colloquium	November 2022

"Fourier Expansions of Automorphic Forms"
SIAM Network Sciences Workshop September 2022
"Topological Considerations of Social Contact Networks for Disease Transmission"
WSU CLaN Seminar March 2022
"Klingen Vectors and Siegel Paramodular Forms"
IDeA Program Meeting, NIGMS, NIH, September 2020
"Modeling COVID-19 in Rural Communities"
Combinatorics, Linear Algebra and Number Theory (CLaN) Seminar, WSU March 2019
"Fourier Coefficients and Hecke Eigenvalues of Siegel Paramodular Forms"
Texas-Oklahoma Representation Theory and Automorphic Forms Workshop, April 2018
"Relations Between Fourier Coefficients: An Application of Stable Kingen Theory.?
AMS Western Sectional Meeting April 2017
"Examples of Paramodular Surfaces"
Visualizing Science Exhibition and Renfrew Interdisciplinary Colloquium March 2017
"Hyperelliptic Threshold Noise"
Joint Meetings of Mathematics, Special Session on Number Theory and Cryptography January 2016
"On the modularity of hyperelliptic curves of genus 2?
ICERM Workshop "Modular Forms and Curves of Low Genus: Computational Aspects" Brown University Sept. 2015
"Fourier Coefficients for Twisted Siegel Modular Forms"
Summer REU Colloquia: A Tour of the Mathematical Sciences Virtual colloquium series hosted by Purdue University and Howard University July 2015
"Modularity of surfaces"
TORAS Conference at University of Oklahoma: *Plenary Speaker* March 2015
"Modularity of Abelian Surfaces," Karcher Colloquium
"Twisting of Paramodular Vectors"
"Fourier Coefficients for Twists of Siegel Paramodular Forms"
Summer School on Special Values of L-functions June 2014
"Twisting of Siegel Paramodular Forms" (in research program)
Course on "L-functions and Galois Cohomology"
Purdue Automorphic Forms Seminar April 2013
"Twists of Paramodular Vectors"
Pacific Northwest Number Theory Conference May 2011
"Special values of L-functions and the Iwasawa main conjecture for imaginary quadratic fields"
Caltech Number Theory Seminar May 2010
"Siegel modular forms of degree two attached to Hilbert modular forms"
University of British Columbia/Simon Fraser University Number Theory Seminar March 2010
"Siegel modular forms of degree two attached to Hilbert modular forms"
Canadian Mathematical Society Dec 2007
"The equivariant main conjecture of Iwasawa Theory for imaginary quadratic fields"
Universitat Regensburg, Series of 4 Lectures May 2006
"Special Values of L-functions," Sponsored Lectures.

Courses Taught

Department of Mathematics, University of Idaho 2007-present
Abstract Algebra I, II (Math 461, 462–F19, S20, F21)
Proof Via Number Theory (UG) (Math 215–F17, S18, S19, F20, S21, F21, F22)
Theory of Numbers (UG) (Math 386–S18, S20, S22)
Cohomology of Groups (G) (Math 504–F18)
Commutative Algebra (G) (Math 557–F14, F18)
Algebraic Geometry (G) (Math 558–S15)
Calculus I (UG) (Math 170–F14)
Cryptography (UG) (Math 415–F10, F13, F15, F22)

Linear Algebra (UG) (Math 330–S10, S11, S12, S13, S14, S15, Su16, F17, F19, S23)
Algebraic Number Theory (G) (Math 504–S10,S16; Math 559–S19,S23)
Groups and Fields I, II (Math 555,556–F09-S10)
Rings and Modules (G) (Math 551–S09)
Linear Algebra (G) (Math 550–F08)
Introduction to Higher Mathematics (UG) (Math 215–F07, S08, F08, S09, F10, S11, S12, F12, S13, S14, F14, F15, S16)

NSF MSP on Making Mathematica Reasoning Explicit 2012-2014
Proportional Reasoning Instructor (PD) (Su12)
Geometric Reasoning Instructor (PD) (Su13)
Algebraic Reasoning Instructor (PD) (Su14)

Department of Mathematics, Brandeis 2005-2007
Algebra (G) (Math 101a–F06)
Algebraic Topology (G) (Math 121a–F05)
Rings and Fields (UG) (Math 28b–F06)
Number Theory (UG) (Math 38–S07)
Algebra (UG) (Math 30a–F05)
Statistics (UG) (Math 8a–S06)
Biostatistics (UG) (Math 51a–S06, S07)

Professional Experience/Service

TPSE Mathematics Advisory Group on Graduate Education
Association for Women in Mathematics Education Committee member 2017- (chair 2019)
Editor: Women in Numbers Europe 2, Proceedings Volume
University of Idaho Faculty Senate Committees:
Teaching and Advising 2014-2016 (chair AY15-16)
Honors Program 2017-2020 (chair AY 19-20)
Mathematics Department Executive Committee 2019
Reviewer: Math Reviews, ZbMath, Journal of the Ramanujuan Mathematics Society, Mathematical Modelling of Natural Phenomena
Organizer: Special Session on Arithmetic Geometry at 2010 and 2012 Joint Meetings of Mathematics, 2012 Pacific Northwest Number Theory Conference
Founder and Director of Idaho Math Circle 2008-
Co-director of Informal Mathematics Education program at Eureka! Palouse 2016-2018