

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
<i>Summa Cum Laude</i> with High Honors in Chemistry	

Employment

Professor, Department of Mathematics, University of Idaho	2024–
Associate Professor, Department of Mathematics, University of Idaho	2016–2024
Assistant Professor, Department of Mathematics, University of Idaho	2007–2016
Lecturer, Department of Mathematics, Brandeis University	2005–2007

Research Interests

- Number Theory, Arithmetic Geometry, Automorphic Representation Theory
- Siegel Modular Forms with Paramodular Level, Representations of $\mathrm{GSp}(4)$
- Special Values of L -functions, Iwasawa Theory, Abelian Surfaces
- Quaternionic modular forms, generalized Fourier expansions
- Mathematical modeling and formal methods for secure system design

Papers

- Johnson-Leung, J. and Rupert, N. *An explicit theta lift to Siegel Modular Forms* (to appear in *Women in Numbers 6*) arXiv:2501.09109 (2025)
- 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* COVID 4 (5) 658–671 (2024)
- Jennifer Johnson-Leung, Joshua Parker, Brooks Roberts. *The paramodular Hecke algebra* Research in Number Theory, 10, 91 (2024).
- 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)

- 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. Ramanujan 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

- Spencer J. Fox, Kaitlyn Johnson, Briana Owirodu, Jennifer Johnson-Leung, Marcel Elizondo, Desmar Walkes, Lauren Ancel Meyers , “COVID-19 Risk Assessment for Public Events.” University of Texas COVID-19 Modeling Consortium, May 9, 2022.
- 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 and Fellowships

AI Fellow, Institute for Integrated Data Science	2025
Schweitzer Engineering Laboratory (Fundamental Principles of Cybersecurity)	2023–2025
AIM SQuARe (New Directions in Quaternionic Modular Forms)	2023–2026
NIH Supplement for COVID modeling (co-Director)	2020–2022
Renfrew Faculty Fellowship	2020–2023
Micron Gift funding a GEAR UP summer camp on proportional reasoning	2017
NSF MSP Grant (Co-PI) (Making Mathematical Reasoning Explicit)	2011–2016
NSA Young Investigators Award (Special values of L-functions and motivic elements for abelian surfaces with complex multiplication)	2010–2012
UI Seed Grant (Special Values of L-functions of CM Fields)	2008

PhD Students

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

Selected Presentations

Canadian Mathematical Society Winter Meeting	November 2024
“Index-lowering operators on Jacobi forms and stable Klingen theory”	
UCSD Number Theory Seminar	October 2024
“Rationality of certain power series attached to paramodular Siegel modular forms”	

Texas-Oklahoma Representation Theory and Automorphic Forms Workshop	April 2024
“The paramodular Hecke algebra”	
PRiME Colloquium, Pomona College	July 2023
“Fourier Coefficients of Modular Forms and Arithmetic”	
Joint Mathematics Meeting Special Session on Women in Automorphic Forms	January 2023
“Stable Klingen Vectors and Paramodular Newforms”	
Texas Tech Algebra and Number Theory Seminar	November 2022
“Stable Klingen subgroups and paramodular forms of deep level”	
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 Klingen 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
“Fourier Coefficients for Twisted Siegel Modular Forms”	Sept. 2015
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: <i>Plenary Speaker</i>	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)
 Discrete Mathematics (UG) (Math 176–F23, S24, F24, S25)
 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)
 Algebraic Topology (G) (Math 523–S25) 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, S24, F24)
 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

American Mathematical Society Human Rights Committee, 2025–
 Association for Women in Mathematics Policy and Advocacy Committee, 2024–
 TPSE Mathematics Advisory Group on Graduate Education, MDLN
 Association for Women in Mathematics Education Committee member 2017–2023 (chair 2019)
 Editor: Women in Numbers Europe 2, Proceedings Volume
 University of Idaho Faculty Senate Committees:
 Faculty Affairs Committee 2024– 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 Ramanujan 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