

# JAKOB STREIPEL

## Curriculum vitæ

Department of Mathematics & Statistics  
University of Maine  
Orono, ME 04469, USA

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[faculty.umaine.edu/jakobstreipel](http://faculty.umaine.edu/jakobstreipel)

## EMPLOYMENT

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**University of Maine** Orono, ME, USA

Fixed-term Assistant Professor

2022–present

## EDUCATION

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**Washington State University** Pullman, WA, USA

2017–2022

Ph.D. Mathematics

Awarded 2022

Thesis: *Moments of L-functions associated with Maass forms*

Advisor: Sheng-Chi Liu

**Linnæus University** Växjö, Sweden

2013–2017

M.Sc. Mathematics

Awarded 2017

Thesis: *Modelling the Number of Periodic Points of Quadratic Maps using Random Maps*

B.Sc. Mathematics

Awarded 2015

Thesis: *On the Number of Periodic Points of Quadratic Dynamical Systems Modulo a Prime*

## PUBLICATIONS

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2. *The twisted second moment of L-functions associated to Hecke–Maass forms* (with Sheng-Chi Liu), to appear in *International Journal of Number Theory* (2023).
1. *Twisted Moments of  $GL(3) \times GL(2)$  L-functions*, *International Journal of Number Theory*, **18**:6 (2022), 1301–1334. DOI, ARXIV:2202.01911

## MISCELLANEOUS

1. *Agent-Based Modeling to Simulate Aerosolized Transmission of SARS-CoV-2 Inside Small Ventilated Spaces* (with Matthew Gaddis and Valipuram Manoranjan), *COVID*, **3**:7 (2023), 937–955. DOI

## AWARDS AND HONOURS

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- 2021 · WSU William and Mary Graber Sciences Scholarship  
 · WSU Sidney G. Hacker Graduate Mathematics Scholarship for Excellence in Teaching  
 · WSU College of Arts and Sciences Excellence in Teaching by a Graduate Student Award — *College-wide award for a single graduate student who exhibits exemplary teaching performance in the classroom*
- 2020 · WSU Nancy J. Robertson Endowed Graduate Fellowship for outstanding citizenship and representation of the department
- 2019 · WSU Winner of departmental 3 Minute Thesis competition  
 · WSU Nancy J. Robertson Graduate Teaching Fellowship in Mathematics for excellence in teaching
- 2015 · Växjö–Öjaby Rotary Club’s Scholarship for Natural Sciences and Mathematics

## WORKSHOPS

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- 2023 · Delta symbols and the subconvexity problem October 16–20  
*American Institute of Mathematics, Pasadena, CA, USA*
- Inclusive Paths in Explicit Number Theory Summer School July 2–15  
*BIRS at University of British Columbia–Okanagan, Kelowna, BC, Canada*
- 2022 · *L*-functions in Analytic Number Theory November 18–20  
*Banff International Research Station, Banff, AB, Canada*
- PIMS CRG Workshop on Moments of *L*-functions July 25–29  
*University of Northern British Columbia, Prince George, BC, Canada*
- 2021 · MSRI Summer Graduate School: Sparsity of Algebraic Points June 7–18  
*Mathematical Sciences Research Institute, Virtual via Zoom*
- 2019 · Teaching Mathematics via Primary Historical Sources (TRIUMPHS) July 19–20  
*New Mexico State University, Las Cruces, NM, USA*

## CONFERENCES

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- 2023 · Midwest Arithmetic Geometry and Number Theory Conference October 7–8  
*University of Michigan, Ann Arbor, MI, USA*
- Maine–Québec Number Theory Conference September 30–October 1  
*University of Maine, Orono, ME, USA*
- Joint Mathematics Meeting January 4–7  
*Boston, MA, USA*
- 2022 · Québec–Maine Number Theory Conference October 15–16  
*Université Laval, Québec City, QC, Canada*
- 50 Years of Number Theory and Random Matrix Theory June 21–24  
*Institute for Advanced Studies, Princeton, NJ, USA*
- Pacific Inland Mathematics Undergraduate Conference April 9  
*Washington State University, Pullman, WA, USA*
- Joint Mathematics Meeting April 6–9  
*Virtual via Zoom*
- Oregon Number Theory Days — Winter Showcase February 19–20  
*Oregon State University, Corvallis, OR, USA*
- 2021 · Oregon Number Theory Days October 1  
*Portland State University, Portland, OR, USA*
- Joint Mathematics Meeting January 6–9  
*Virtual via Zoom*
- 2020 · Data Science and Image Analysis Conference of the Pacific Northwest February 29–March 1  
*Washington State University, Pullman, WA, USA*
- 2019 · Pacific Northwest sectional meeting of the Mathematical Association of America April 12–13  
*University of Portland, Portland, OR, USA*
- 2018 · Western Canada Linear Algebra Meeting May 26–27  
*Washington State University, Pullman, WA, USA*
- 2016 · 13th “Sydostkonferensen” of Mathematics August 25  
*Linnæus University, Växjö, Sweden*
- Dynamics and Graphs over Finite Fields: Algebraic, Number Theoretic and Algorithmic Aspects March 28–April 2  
*CIRM, Luminy, Marseille, France*
- 27th Nordic Congress of Mathematicians March 16–20  
*Stockholm University, Stockholm, Sweden*
- 2015 · 12th “Sydostkonferensen” of Mathematics August 25  
*Blekinge Institute of Technology, Karlskrona, Sweden*

2014 · 11th “Sydostkonferensen” of Mathematics August 27  
*Linnæus University, Växjö, Sweden*

## INVITED/CONTRIBUTED TALKS

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2023 · Zero-density estimate for Hecke–Maass  $L$ -functions September 30  
*Maine–Québec Number Theory Conference, University of Maine, Orono, ME, USA*

· Averages of long Dirichlet polynomials of Hecke–Maass cusp forms January 4  
*Joint Mathematics Meeting, Boston, MA, USA*

2022 · Using second moments to count zeros November 13  
*FRG Grad Seminar on Averages of  $L$ -functions and Arithmetic Stratification, Zoom*

· Twisted moments of  $GL(3) \times GL(2)$   $L$ -functions July 28  
*PIMS CRG Workshop on Moments of  $L$ -functions, Prince George, BC, Canada*

· Twisted moments of  $GL(3) \times GL(2)$   $L$ -functions April 7  
*Joint Mathematics Meeting, Zoom*

· How to count prime numbers (and other things), the hard way March 22  
*Colloquium, Kenyon College, Gambier, OH, USA*

· An introduction to Maass forms March 9  
*Research seminar in mathematics, Linnæus University, Zoom*

· Determining self-dual  $GL(3)$  Maass forms February 19  
*Oregon Number Theory Days, Oregon State University, Corvallis, OR, USA*

## LOCAL/DEPARTMENTAL TALKS

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2023 · The recursive structure of Hecke relations April 24

2022 · Counting zeros of holomorphic functions à la Selberg November 4  
 · Shifted moments of  $L$ -functions October 3  
 · Multiple Dirichlet series January 31

2021 · But *why* can't we find nice antiderivatives of some functions? October 20  
 · Low-lying zeros of  $L$ -functions October 18  
 · Compilers and the need for speed (Computer science) October 1  
 · Diophantine approximation and counting points on curves September 13  
 · A Tale of Three Integrals (oscillation, saddles, and cancellation) September 1  
 · Randomness: How to fake it until you make it (Computer science) March 26  
 · Averages in number theory February 1

2020 · Timing attacks: how fast code ruins your day (Computer science) September 25  
 · Central values and moments of  $L$ -functions September 21  
 · Eigenform Relations for Hilbert Modular Forms February 24  
 · Equidistribution of Zeros of Polynomials February 19

2019 · Mean, Meaner, Meanest Mean Value Theorems November 13  
 · Euclidean Construction of Rational Triangles of Equal Area November 4  
 · Cauchy's Functional Equation September 11  
 · Ultrametrics and Weird Calculus February 20  
 · The Congruent Number Problem February 4

2018 · Special Relations Between Normalised Eisenstein Series October 19  
 · Filters, Ultrafilters, and Tychonoff's theorem September 19  
 · An Introduction to Discrete Dynamical Systems March 28  
 · Über die Gleichverteilung von Zahlen mod. Eins March 5  
 (on the equidistribution of numbers modulo one)  
 · Quadratic Dynamical Systems over Finite Fields February 5

2017 · On Numbers... A Brief Exploration of the Surreal Numbers August 28

2015 · On Numbers... An Introduction to Surreal Numbers October 21

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## MENTORING EXPERIENCE

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<b><math>p</math>-adic numbers</b> Mentored the independent studies of a senior undergraduate student	<i>Fall 2021</i>
<b>Analytic number theory</b> Mentored the independent studies of a senior undergraduate student	<i>Spring 2021</i>

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## TEACHING EXPERIENCE

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### UNIVERSITY OF MAINE

<b>Problems Seminar II</b> (Putnam seminar) Instructor of record	<i>Fall 2023</i>
<b>Graduate Research Seminar</b> Instructor of record	<i>Fall 2023</i>
<b>Calculus II</b> Instructor of record	<i>Fall 2023</i>
<b>Theory of Numbers</b> Instructor of record	<i>Spring 2023</i>
<b>Calculus I</b> Instructor of record	<i>Spring 2023</i>
<b>Calculus III</b> Instructor of record	<i>Fall 2022</i>

### WASHINGTON STATE UNIVERSITY

<b>Calculus III</b> Instructor of record	<i>Summer 2022</i>
<b>Intro to Mathematical Reasoning</b> Instructor of record	<i>Spring 2022, Fall 2020</i>
<b>Introductory Linear Algebra</b> Instructor of record	<i>Fall 2021</i>
<b>Calculus II</b> Instructor of record Teaching assistant	<i>Summer 2021</i> <i>Spring 2018</i>
<b>Theory of Numbers</b> Instructor of record	<i>Spring 2021</i>
<b>Differential Equations</b> Instructor of record	<i>Summer 2020</i>
<b>Algebraic Structures</b> Instructor of record	<i>Spring 2020</i>
<b>Algebra Methods and Introduction to Functions</b> Instructor of record	<i>Fall 2019</i>
<b>Discrete Structures</b> Instructor of record	<i>Summer 2019</i>
<b>Mathematics for Business and Economics</b> Instructor of record	<i>Spring 2019</i>
<b>Calculus for Business and Economics</b> Instructor of record	<i>Fall 2018</i>
<b>Mathematical Computing</b> Instructor of record	<i>Summer 2018</i>
<b>Calculus I</b> Teaching assistant	<i>Fall 2017</i>

### LINNÆUS UNIVERSITY

<b>Calculus/Introductory Real Analysis I</b> Instructor of record Teaching assistant	<i>Spring 2017, 2016</i> <i>Spring 2015</i>
<b>Discrete Mathematics</b> Teaching assistant	<i>Spring 2017, 2016, 2015</i>
<b>Cryptography and Coding Theory</b> Teaching assistant	<i>Spring 2017, 2016</i>
<b>Basic Mathematics</b> Instructor of record Teaching assistant	<i>Fall 2016</i> <i>Fall 2015</i>
<b>Mathematical Modeling I</b> Instructor	<i>Fall 2016</i>
<b>Technical Information and Communication</b> Instructor	<i>Fall 2016</i>
<b>Calculus for Engineers</b> Teaching assistant	<i>Spring 2015</i>
<b>Basic Mathematics for Engineers</b> Teaching assistant	<i>Fall 2015, 2014</i>
<b>Linear Algebra for Engineers</b> Teaching assistant	<i>Fall 2015, 2014</i>

Above, *Instructor of record* means I taught the class; created homework, quizzes, exams; held office hours; in some cases graded all course materials, in other cases supervised recitation tutors or graders.

*Instructor* means I was one of several instructors in charge of the same class.

*Teaching assistant* means I ran recitation/problem sessions; graded homework, quizzes, and tests (which were sometimes created by me); held office hours.

## PROFESSIONAL SERVICE

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- 2022 · Chair of the AMS Contributed Paper Session on Number Theory II – Automorphic Forms, Diophantine Equations, Finite Fields and Coding Theory at JMM  
 · Judge at the undergraduate poster session at JMM

Peer reviewer for the College Mathematics Journal  
 Reviewer for MathSciNet

## DEPARTMENTAL SERVICE

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- 2022–2023 · Volunteered in the mathematics tutoring center at University of Maine  
 2019–2022 · On my own initiative, created, organized, and gave feedback on annual practice Graduate Qualifying Exams for grad students over summer and winter  
 2017–2022 · Volunteered in the mathematics and statistics tutoring center at Washington State University  
 2021 · Organized the department’s analysis seminar  
 · Instructor for the department’s Graduate Qualifying Exam review sessions  
 2020 · Taught a L<sup>A</sup>T<sub>E</sub>X workshop for the graduate student AMS chapter  
 · Organized and ran departmental workshops on online grading software because of the global pandemic  
 · Graduate student representative at faculty meetings  
 2018–2019 · Instructor for the department’s Graduate Qualifying Exam review sessions

## OUTREACH

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- 2023 · “The congruent number problem“ Talk to local mathematics club *February 21*  
 2022 · Volunteered at the Kids Science & Engineering Day at WSU *March 26*  
 · “Counting prime numbers (and other things), the hard way” *February 4*  
 Expository talk to undergraduate students  
 2018 · “How many prime numbers are there?” Talk to middle school students *March 12*

## LANGUAGES

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**English** native  
**Swedish** native  
**French** conversational  
**Russian** beginner