

CONTACT
INFORMATION

818 Van Vleck Hall
 Department of Mathematics
 University of Wisconsin-Madison
 480 Lincoln Drive Madison, WI 53706 USA

Phone: (+1) 415 351 8500
 Email: lalitkumarj@gmail.com
 Web: <http://math.wisc.edu/~jain>

RESEARCH
INTERESTS

Broad: Arithmetic Geometry, Machine Learning.
 Specific: Monodromy Problems and Galois Representations, Active Learning.

EDUCATION

University of Wisconsin-Madison, Madison, Wisconsin USA
 Ph.D., Mathematics, Expected May 2015
 Dissertation Topic: “Big Mod ℓ Monodromy of Families of G -Covers”
 Advisor: Jordan Ellenberg
 Minor: Computer Science

University of Waterloo, Waterloo, Ontario Canada
 Masters of Mathematics in Pure Mathematics, May 2008
 Thesis: “Koblitz’s Conjecture for the Drinfeld Module”
 Advisors: Yu-Ru Liu and Wentang Kuo

University of Waterloo, Waterloo, Ontario Canada
 Bachelors of Mathematics in Pure Mathematics, December, 2006
 Minor in Combinatorics and Optimization, Graduated with Honors and Distinction

HONORS AND
AWARDS

Math Department TA Teaching Award, UW-Madison, Spring 2014
 NSF VIGRE Fellowship recipient, UW-Madison, 2011-2014
 University of Waterloo Mike Vangoch Memorial Award, 2006
 University of Waterloo, W.T. Tutte Fellow
 University of Waterloo, Dean’s Honours List

PUBLICATIONS

L. Jain, *The Big Mod ℓ Monodromy of Families of G -Covers*, In Preparation
 K. Jamieson, L. Jain, C. Fernandez, N. Glatard, R. Nowak, *NEXT: A System for Real-World Development, Evaluation, and Application of Active Learning* in Advances in Neural Information Processing Systems 28, 2015. <http://www.cs.berkeley.edu/~kjamieson/resources/next.pdf>
 E. Dummit, R. Harron, L. Jain, R. Pollack, D. Ross, M. Hablicsek, *Explicit computations of Hida families via overconvergent modular symbols*, <http://arxiv.org/abs/1510.05795>, 2015. Submitted
 L. Jain, P. Tzermias, *Beukers’ integrals and Apéry’s recurrences*. Journal of Integer Sequences. 8: Issue 1, Article 05.1.1., 2005
 J. Holmes, V. Danilov, L. Jain, *Transverse Stability Studies of the SNS Ring*. Proceedings of 2005 Particle Accelerator Conference, Knoxville, Tennessee, 2254-2256, 2005.

TEACHING
EXPERIENCE

UNIVERSITY LEVEL

University of Wisconsin, Madison, Madison, Wisconsin USA
Teaching Assistant. Led discussion sections, wrote and graded quizzes/homework and held office hours. Received a TA evaluation of Superior each semester.

Fall 2014, Math 221: Calculus I
 Fall 2013, Math 114: Algebra and Trigonometry

Fall 2012, University of Wisconsin, Math 320: Differential Equations and Linear Algebra
Spring 2011-2013, University of Wisconsin, Math 490: NSF sponsored CURL (Collaborative Undergraduate Research Lab)
Fall 2010, Math 221: Calculus I

University of Waterloo, Waterloo, Ontario Canada

Instructor. Taught a three credit class on introductory number theory. Received an excellent teaching evaluation.

Fall 2007, Math 135: Introduction to Algebra and Number Theory

GRADE SCHOOL

Ida B. Wells High School, San Francisco, California USA

Teacher. Taught a variety of classes as a high school teacher.

San Francisco and Oakland Math Circles, San Francisco, California USA

Teacher. Led a variety of enrichment math classes for high school and middle school students.

OTHER
EMPLOYMENT

Intuit Inc., San Diego, 6/2015-9/2015, Data Science Intern with Consumer Tax Group: Responsible for developing and deploying contextual bandits algorithms for segmentation. Also worked on a library for data transformation, manipulation and imputation. Received a company spotlight for my work.

Seventh Harmonic LLC, Madison, WI, 8/2013-Present, Co-Founder: Co-founder and software engineer (seventhharmonic.com). Responsible for developing new products, such as Bee-Line, an Android game.

Oak Ridge National Lab/Spallation Neutron Source, Oak Ridge, T.N., 1/2008-4/2008, Intern: Researched instability thresholds at the Spallation Neutron Source particle accelerator. Studied experimental beam data using Matlab and C++ for signal processing and visualization.

TALKS

INVITED TALKS

The ℓ -adic monodromy of G -covers, Frontier Seminar, Colorado State University, Fall 2014,
Applications of Monodromy to Number Theory, PANTS XXII (Fall 2014)

CONFERENCE TALKS

Topology Student Workshop, Talk: *Monodromy of Cyclic Covers*, Georgia Institute of Technology, Atlanta GA, June 2014

Midwest Number Theory Conference for Graduate Students, Talk: *Cohen Lenstra Heuristics and Monodromy*, University of Illinois at Urbana-Champaign, June 2014

Joint Mathematics Meetings, Atlanta, GA, Talk: *Optimal Control of Piecewise Continuous State Processes*, 2005

Canadian Undergraduate Mathematics Conference, Talk: *Beukers' Integrals and Apéry's Recurrences*, 2006

OTHER UNIVERSITY OF WISCONSIN-MADISON SEMINAR PRESENTATIONS

NEXT: A system for Active Learning Hamlet Seminar, University of Wisconsin-Madison, Fall 2015

Monodromy and Hurwitz Schemes, Student Number Theory Seminar, Fall 2014

Hasse Principle, Brauer-Manin Obstructions and del Pezzo surfaces, Student Number Theory Seminar, Fall 2013
Intersection Theory, Algebraic Geometry Seminar, Fall 2012
Counting Cubic Number Fields, Number Theory Seminar, Spring 2012
Divisors and Surfaces, Number Theory Seminar, Fall 2012
Grassmannians as a Moduli Space, Algebraic Geometry Seminar, Fall 2011
Music Hacking, Systems, Information and Learning Seminar, Fall 2011
Ranks of Elliptic Curves, Number Theory Seminar, Fall 2010

OTHER
CONFERENCES
ATTENDED

Arizona Winter School on Arithmetic and Higher-Dimensional Varieties, Tucson AZ, March 2015
Graduate Workshop on Moduli of Curves, Simons Center for Geometry and Physics, Stony Brook NY, July 2014
Thin Groups, University of Michigan, Ann Arbor MI, April 2014
Western Algebraic Geometry Symposium, Boulder Co, April 2014
Arizona Winter School on Arithmetic Statistics, Tucson AZ, March 2014
Hot Topics: Perfectoid Spaces and their Applications, Berkeley CA, 2014
New Geometric Techniques Summer Graduate School, Berkeley CA, 2013
Atkin Memorial Lecture and Workshop Cohen-Lenstra Heuristics, Chicago IL, May 2013
Sage Days, 44, Madison, Wisconsin, 2013
Arizona Winter School on Modular Forms, Tucson AZ, 2013
Penn State Göttingen International Summer School on Number Theory, Göttingen, 2012
Arizona Winter School on Ramification and Geometry, Tucson AZ, 2012
Park City Mathematics Institute Graduate Summer School on Moduli Spaces of Riemann Surfaces, Park City UT, June 2011
Arizona Winter School on Stark-Heegner Points, Tucson AZ, 2011

LEADERSHIP
ACTIVITIES

Organizer of UW-Madison Math Circles Fall 2012 - Fall 2014: Responsible for organizing weekly meetings, arranging for speakers and ensuring things ran smoothly.
Co-Organizer Midwest Number Theory Conference for Graduate Students/Midwest Number Theory Days, 2011, University of Wisconsin-Madison
Co-Organizer Waterloo Symposium in Undergraduate Mathematics, 2007, University of Waterloo, Ontario

SOFTWARE
PROJECTS

NEXT/System for Active Learning: NEXT (nextml.org) is a real time computational framework and open-source machine learning system that simplifies the deployment and evaluation of active learning algorithms relying on human feedback. Example applications include online classification, bandit problems, and multidimensional scaling. Project is advised by Robert Nowak at UW-Madison.

SAGE: Overconvergent Modular Symbols: Participated in the development of an overconvergent modular symbols library for Sage that explicitly implements work of Pollack and Stevens.

Music Hack Day, Boston Fall 2012: Participated with Jordan Ellenberg and Andrew Bridy. We used statistical information from the Million Song Database to create our own composition. Extended this project to use machine learning algorithms for identifying metrics of when two songs were similar. Won 12th place in a related Kaggle competition.

REFERENCES

Jordan Ellenberg

Department of Mathematics
UW-Madison
Madison, WI 53706
ellenber@math.wisc.edu

Robert Nowak

Electrical and Computer Engineering
UW-Madison
Madison, WI 53706
rdnowak@wisc.edu

Dan Margalit

School of Mathematics
Georgia Institute of Technology
Atlanta, GA 30332
margalit@math.gatech.edu