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## CURRICULUM VITAE

### JOSHUA MICHAEL LANSKY

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#### Education

Harvard University:

Ph.D. in mathematics, June 1998, dissertation entitled *Hecke rings of groups over local fields*, Benedict Gross, advisor

A.M. in mathematics, June 1995

Brown University:

Sc.B. in mathematics and physics (*magna cum laude*, with Honors), June 1993

#### Academic Appointments

American University, Professor, September 2014–present

American University, Associate Professor, September 2008–2014

American University, Assistant Professor, September 2004–2008

Bucknell University, Assistant Professor, July 2001–August 2004

University of Toronto, Assistant Professor (postdoctoral), July 2000–June 2001

University of Rochester, Assistant Professor (postdoctoral), July 1998–June 2000

#### Honors and Awards

Nominated by the College of Arts and Sciences for the Outstanding Teaching in a Full-Time Appointment Award, American University, 2018–19

Invited to participate in the Mathematisches Forschungsinstitut Oberwolfach workshop *New Developments in Representation Theory of  $p$ -adic Groups*, 2018

Invited to Participate in the Centre International de Rencontres Mathématiques workshop *Relative Aspects in Representation Theory, Langlands Functoriality and Automorphic Forms*, 2015

Invited to Participate in the Mathematisches Forschungsinstitut Oberwolfach workshop *Lattices and Applications in Number Theory*, 2015

Invited to Participate in the American Institute of Mathematics workshop *Algorithms for Lattices and Algebraic Modular Forms*, 2012

Morton Bender Prize (awarded to one faculty member every year in recognition of important scholarly and professional achievements as an associate professor), American University, 2010

Chosen as a panel member for the Noontime Conversation series by the Center for Teaching, Research and Learning, October 2009. The panel discussed the video *Inspired Teaching* shown at the 2009 Ann Ferren Teaching Conference

Chosen to appear in the video *Inspired Teaching*, filmed for the 2009 Ann Ferren Teaching Conference, by the Center for Teaching Excellence at American University, 2008

Selected to give the address at the annual banquet of the Bucknell University chapter of the Pi Mu Epsilon Mathematical Society, 2004

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Nominated for Professor of the Year, University of Rochester, 2000  
Joseph Leonard Walsh Fund Award (scholarship award), Harvard University, 1994–98  
Elected Full Member of Sigma Xi, 1995  
David Howell Premium for Excellence in Mathematics and Natural Philosophy (senior prize), Brown University, 1993  
Henry Parker Manning Mathematical Prize (junior prize), Brown University, 1992

### Areas of Research

Representation Theory  
Automorphic Forms  
Number Theory

### Publications

- Root Data with Group Actions*, with J. Adler. Representations of Reductive  $p$ -adic Groups, Progress in Mathematics, **328**, Birkhäuser, Basel, Switzerland, 2019.
- When is the Wilcoxon-Mann-Whitney procedure a test of location?*, with R. Jernigan and S. Parker, British Journal of Mathematical and Statistical Psychology, accepted for publication, 2018.
- Lifting representations of finite reductive groups: A character relation*, with J. Adler, M. Cassel, E. Morgan, and Y. Zhao, *Involve*, **9**(5) (2016), 805–812.
- An interpretation of the tame local Langlands correspondence for  $p$ -adic  $PGSp(4)$  from the perspective of real groups*, with M. Adrian, *Israel Journal of Mathematics*, **206**(1) (2015), 353–393.
- Lifting representations of finite reductive groups I: Semisimple conjugacy classes*, with J. Adler, *Canadian Journal of Mathematics*, **66**(6) (2014), 1201–1224.
- Distinguished tame supercuspidal representations and odd orthogonal periods*, with J. Hakim, *Representation Theory*, **16** (2012), 276–316.
- Distinguished supercuspidal representations of  $SL_2$* , with J. Hakim, *Harmonic Analysis on Reductive,  $p$ -adic Groups*, 103–134, Contemporary Mathematics, 543, American Mathematical Society, Providence, RI, 2011.
- Klyachko models of  $p$ -adic special linear groups*, with C. R. Vinroot, *Proceedings of the American Mathematical Society*, **139**(6) (2011), 2271–2279.
- Depth-zero base change for ramified  $U(2, 1)$* , with J. Adler, *Transactions of the American Mathematical Society*, **362**(10) (2010), 5569–5599.
- Conductors and newforms for  $SL(2)$* , with A. Raghuram, *Pacific Journal of Mathematics*, **231**(1) (2007), 127–154.
- Depth-zero base change for unramified  $U(2, 1)$* , with J. Adler, *Journal of Number Theory*, **114**(2) (2005), 324–360.
- A variation on the solvable case of the Dedekind conjecture*, with K. Wilson, *Journal of the Ramanujan Mathematical Society*, **20**(2) (2005), 81–90.
- Conductors and newforms for  $U(1, 1)$* , with A. Raghuram, *Indian Academy of Sciences. Proceedings. Mathematical Sciences*, **114**(3) (2004), 319–343.
- On the correspondence of representations between  $GL(n)$  and division algebras*, with A. Raghuram, *Proceedings of the American Mathematical Society*, **131** (2003), 1641–1648.
- Hecke algebras and automorphic forms*, with D. Pollack, *Compositio Mathematica*, **130**(1) (2002), 21–48.
- Parahoric fixed spaces in unramified principal series representations*, *Pacific Journal of Mathematics*, **204**(2) (2002), 433–443.
- Decomposition of double cosets in  $p$ -adic groups*, *Pacific Journal of Mathematics*, **197**(1) (2001), 97–117.
- A  $q$ -analog of Freudenthal’s weight multiplicity formula*, *Indagationes Mathematicae, N.S.*, **11**(1) (2000), 87–94.
- Hecke rings of groups over local fields*, Ph.D. Thesis, Harvard University, 1998.

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## Other Scholarly Articles

- Lifting representations of finite reductive groups II: Explicit conorms*, with J. Adler, in preparation.
- Quasi-semisimple actions of finite groups on  $p$ -adic groups and buildings*, with J. Adler, in preparation.
- Models for Distinguished Tame Supercuspidal Representations*, with J. Hakim, in preparation.

## Grants

- National Science Foundation, *Support for US Participants at CIRM Representation Theory Conference*, May 2017–April 2016
- National Security Agency Grant, Mathematical Sciences Program, *Liftings and Symmetric Spaces over  $p$ -adic Fields*, September 2013–August 2015
- National Science Foundation Grant, Focused Research Group Program, *Characters Liftings, and Types: Investigations in  $p$ -adic Representation Theory*, September 2009–August 2013
- Faculty Research Award, American University College of Arts and Sciences, May 2008–April 2009
- Consultant on National Security Agency Young Investigator Grant H98230-07-1-002, September 2007–August 2009
- College of Arts and Sciences Dean’s Fund Grant, American University, May 2007–April 2008
- College of Arts and Sciences Dean’s Fund Grant, American University, May 2006–April 2007
- Mellon Fund Award, American University, October 2005–October 2006
- Scholarly Development Grant, Bucknell University, May 2003–April 2004

## Invited Talks

- Root Data with Group Actions* in the American Mathematical Society Special Session on Recent Developments in Automorphic Forms and Representation Theory, Hunter College, New York, May 2017.
- Tame Supercuspidal Representations of  $GL(n)$  Distinguished by Orthogonal Groups* in the Centre International de Rencontres Mathématiques conference Relative Trace Formula, Periods,  $L$ -Functions and Harmonic Analysis, Luminy, France, May 2016.
- Algebraic Modular Forms* in the Mathematisches Forschungsinstitut Oberwolfach workshop Lattices and Applications in Number Theory, Oberwolfach, Germany, January 2016.
- Explicit Liftings of Representations of Finite Reductive Groups* in the American Mathematical Society Special Session on Recent Progress in the Langlands Program, Joint Mathematics Meetings, Baltimore, Maryland, January 2014
- Calculations of Hecke Algebra Actions on Spaces of Algebraic Modular Forms* in the American Institute of Mathematics workshop Algorithms for Lattices and Algebraic Automorphic Forms, May 2013
- Finite Reductive Groups: Representations and Liftings* in the Towson State University Mathematics Department Colloquium, March 2012
- Representations and Liftings for Finite Reductive Groups* in the George Washington University Analysis Seminar, January 2012
- Liftings of Representations of Finite Reductive Groups* in the conference Characters, Liftings, and Types II, Boulder Colorado, June 2011
- Liftings of Representations of Finite Groups of Lie Type* in the Wesleyan University Mathematics Department Colloquium, March 2011
- Orthogonally Distinguished Tame Supercuspidal Representations of  $GL(n)$*  in the Ben-Gurion University Algebraic Geometry and Number Theory Seminar, March 2010

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*Tame Supercuspidal Representations of  $GL(n)$  Distinguished by Orthogonal Groups* in the American Mathematical Society Special Session on Harmonic Analysis and Representations of Reductive  $p$ -adic Groups, Joint Mathematics Meetings, San Francisco, California, January 2010.

*Voting, Representation, and the Tabloids: An Introduction to Algebraic Voting Theory* in the American University Mathematics and Statistics Department Seminar, November 2009.

*Liftings of Representations of Finite Groups with Applications to  $p$ -adic Base Change* in the Oklahoma State University/University of Oklahoma Joint Automorphic Forms Seminar, November 2008.

*Liftings of Representations of Finite Groups with Applications to  $p$ -adic Base Change* in the American Mathematical Society Special Session on Automorphic Forms: Representation Theory of  $p$ -adic and Adelic Groups, Chicago, Illinois, October 2007

*Newforms for  $SL(2)$  and  $U(1,1)$*  in the City University of New York Number Theory Seminar, March 2007

*Shintani Lifting and Types* in the American Mathematical Society Special Session on Number Theory, Storrs, Connecticut, October 2006

*Primes in Arithmetic Progressions* in the University of Akron Mathematics Research Experience for Undergraduates Seminar, July 2006

*The Brouwer Fixed Point Theorem* in the University of Akron Mathematics Research Experience for Undergraduates Seminar, July 2005

*Artin  $L$ -Functions and the Dedekind Conjecture* in the American University Mathematics and Statistics Department Colloquium, February 2005

*Base Change and  $K$ -Types for  $U(3)$*  in the University of Maryland Lie Group and Representation Theory Seminar, December 2004

*Base Change and  $K$ -Types for  $U(3)$*  in the American Mathematical Society Special Session on Representation Theory of Reductive Groups, Evanston, Illinois, October 2004

*The Base Change Lifting* in the University of Iowa Mathematics Department Colloquium, May 2004

*The Base Change Lifting* in the University of Akron Mathematics Department Colloquium, April 2004

*The Brouwer Fixed Point Theorem* at the Pi Mu Epsilon (Bucknell University Chapter) Annual Banquet, April 2004

*Rational Points on Elliptic Curves* in the American University Mathematics Department Colloquium, February 2004

*Newforms for  $SL(2)$  and  $U(1,1)$*  in the University of Massachusetts at Amherst Representation Theory Seminar, December 2003

*Depth-Zero Base Change for  $U(2,1)$*  in the Five College Number Theory Seminar, December 2003

*Newforms for  $SL(2)$  and  $U(1,1)$*  in the University of Connecticut Algebra Seminar, November 2003

*The Local Theory of Newforms* in the Wesleyan University Algebra Seminar, October 2003

*$K$ -Types and Base Change for  $U(3)$*  in the Purdue University Seminar on Automorphic Forms and Representation Theory, April 2003

*Base Change for Unitary Groups* at the Centre de Recherches Mathématiques Workshop on the Langlands Program and Its Applications, January 2003

*$K$ -Types and Base Change for  $U(3)$*  in the Cornell University Lie Groups Seminar, November 2002

*Newforms for  $SL(2)$  and  $U(1,1)$  with Applications* in the Penn State University Algebra and Number Theory Seminar, October 2002

*An Introduction to Elliptic Curves* in the Pi Mu Epsilon Lunch Talk Series at Bucknell University, February 2002

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*Pi* in the Berelson Center for Jewish Life Talk Series at Bucknell University, December 2001  
*Algebraic Modular Forms* in the University of Toronto Number Theory and Lie Theory Seminar, March 2001  
*Primes in Arithmetic Progressions* in the University of Toronto Graduate Student Seminar  
*The Brouwer Fixed Point Theorem* in the University of Rochester Society of Undergraduate Mathematics Students, December 2000  
*Some Computations with Algebraic Modular Forms* at Bucknell University, February 2000  
*Elliptic Curves and Modular Forms* at Gettysburg College, February 2000  
*Algebraic Modular Forms* at Claremont McKenna College, January 2000  
*Lifts of Algebraic Modular Forms* in the McMaster University Number Theory Seminar, October 1999  
*Algebraic Modular Forms and Galois Representations*, a series of two talks in the University of Rochester Number Theory Seminar, September 1999  
*An Introduction to Elliptic Curves* in the Talk Series of the University of Rochester Society of Undergraduate Mathematics Students, November 1999.  
*Algebraic Modular Forms* at the Seaway Number Theory Conference, March 1999  
*The Structure of the Spherical Hecke Ring and Double Coset Decomposition* at the Centre de Recherches Mathématiques Workshop on Algebraic Modular Forms and Modular Forms mod  $p$ , October 1998  
Series of two talks entitled *The Satake Isomorphism and the Structure of the Spherical Hecke Ring* in the University of Rochester Number Theory Seminar, September 1998  
*The Bruhat-Tits Building of a  $p$ -adic Group* at the Harvard University Workshop on  $p$ -adic Groups, July 1998

### **Contributed Talks**

*Algebraic Modular Forms* at the Seaway Number Theory Conference, March 1999

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## Teaching

### American University

#### Courses Taught:

Finite Mathematics	fall 2005–6, 2009, spring 2006, 2010, 2019
Great Ideas in Mathematics	spring 2008–spring 2009
Applied Calculus	fall 2007
Calculus I	fall 2004, 2011, 2016, 2018
Honors Calculus I	fall 2006, 2007
Calculus II	spring 2005, 2009, 2010, 2011, 2012
Honors Calculus II	spring 2007
Calculus III	fall 2005, 2015, spring 2007, 2012–13, 2016
Linear Algebra	fall 2009, 2011, spring 2011, 2013, 2015, 2017
Infinity, Game Theory, and Fractals	fall 2013
Foundations of Mathematics	spring 2012–14, 2018
Number Theory	fall 2004, 2006, 2008, 2012, 2014, 2018
Cryptography	spring 2019
Rings and Fields	spring 2005
Topics in Mathematics: Matrix Groups and Representations	spring 2008, 2015
Selected Topics: Competitive Mathematics	fall 2011–13
Selected Topics: Mathematical Tools in Economics	fall 2014

#### Independent Study Supervision:

Cryptography, one student	spring 2017
Axiomatic Set Theory, one student	fall 2014
Analytic Number Theory, one student	summer 2014
Representation Theory, two students	spring 2014
Real Analysis, one student	spring 2013
Elliptic Curve Cryptography, one student	spring 2011
Harmonic Analysis, one student	summer 2010
Voting Theory and Social Choice, one student	spring 2010
Representation Theory, two students	fall 2009
Cryptology and Applied Cryptography, one student	spring 2009
Honors Capstone in Harmonic Analysis and Representation Theory, one student	spring 2009
Algebraic Number Theory, one student	spring 2009
Algebraic Number Theory, two students	fall 2008
Representation Theory and Voting Theory, one student	spring 2008
Representation Theory, spring 2008, one student	spring 2008
Advanced Encryption Systems, one student	fall 2007
Topics in Number Theory, one student	summer 2007
Applications of Multivariable Calculus to Economics, one student	spring 2007
Elliptic Curves and Cryptography, one student	spring 2007
Representation Theory of Finite Groups	spring 2007
Cryptography, one student	summer 2006
Number Theory and Cryptography, one student	spring 2006
Measure and Integration, one student	spring 2006
Teaching Apprenticeship in Calculus III, one student	fall 2005
Topology, one student	fall 2005

#### Internship Supervision:

Office of National Drug Control Policy, one student	spring 2016
Community Service-Learning Program, one student	spring 2012

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Research Project Supervision:

Summer research project supervisor for one student, summer 2015  
Summer research project supervisor for one student, summer 2014  
Capstone supervisor for one student, fall 2013  
Honors Capstone supervisor for one student, spring 2013  
Summer research project supervisor for three students, summer 2011  
Honors Capstone supervisor for one student, spring 2009  
Summer research project supervisor for graduate student, summer 2007, 2008  
Senior research project supervisor for undergraduate mathematics major, spring 2007

Thesis Supervision:

Advisor for eight Master's Degree candidates, 2006–2017  
Master's Thesis committee member for 12 students, 2006–2017

Academic Advising and Mentoring:

Honors 101 Program Mentor, 2006, 2010–11  
Academic Advisor for 10–12 undergraduate students per year  
Pre-medical Program Mentor for four students

**Bucknell University**

Courses Taught:

Calculus I	fall 2001, 2003
Calculus II	spring 2002–spring 2003
Calculus III	spring 2004
Logic, Sets and Proofs	spring 2002, fall 2003
Introduction to Number Theory	spring 2003
Abstract Algebra	fall 2002, spring 2004
Modern Algebra (Galois Theory)	fall 2001

Thesis Supervision:

Honors thesis advisor for Kevin Wilson, 2003–2004. The thesis, entitled *L-functions and the Dedekind conjecture*, won the Harold W. Miller Prize for best honors thesis of the 2003–2004 academic year and was published in a peer-reviewed journal (see Publications).

Academic Advising:

Academic Advisor for two mathematics majors

**University of Toronto**

Courses Taught:

Advanced Differential and Integral Calculus	fall 2000–spring 2001
Linear Algebra	fall 2000
Introduction to Number Theory	spring 2001

**University of Rochester**

Courses Taught:

Calculus I (with internet homework system <i>WeBWorK</i> )	fall 1999
Calculus II (with <i>WeBWorK</i> )	fall 1998–spring 2000
Transition to Higher Mathematics	spring 1999
Abstract Algebra	spring 2000

Academic Advising:

Academic Advisor for two mathematics majors

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## Harvard University

Courses Taught:

Calculus II spring 1995–96, 1998  
Linear Algebra and Differential Equations spring 1997

## Non-University Instruction

Session leader for the DC Math Circle for talented Washington middle-school students, April 2018

Lecturer at the Centre International de Rencontres Mathématiques in Luminy, France at a summer school training graduate students working in the area of automorphic representations, May 2016

## Curriculum Development

Proposed, designed, and taught the new Mathematics course MATH-616, *Cryptography*, to support the the new Mathematics Master’s Program in Information and Security, 2019.

Participated in the creation of the new Mathematics Master’s Program in Information and Security, including initial planning discussions, course and curriculum development, and teaching, 2015–19.

Led departmental efforts toward the implementation of the AU Core’s Quantitative Literacy requirement: developed general guiding principles for our introductory quantitative courses, and helped initiate the rethinking of our introductory courses to be more interactive, stressing conceptual understanding and practical interpretation, bringing them into alignment with the Core, 2016–17.

Participated in the development of a innovative instructional model for *Calculus I* involving an active learning format, 2016

Proposed, designed, and taught the Topics in Mathematics Course *Matrix Groups and Representations*, 2007–2008, 2015.

Designed and taught the graduate Selected Topics Course *Survey of Advanced Mathematical Tools in Economics* to support the Economics Master’s Program, 2014.

Proposed, designed, and taught the Topics in Mathematics Course *Competitive Mathematics* (a preparation for the Putnam Mathematics Competition and similar competitions), 2011.

## Departmental Service

### American University

Chair of the Department of Mathematics and Statistics, 2015–2017

Rank and Tenure Committee member, 2008–15, 2018–present (chair 2011-15)

Faculty mentor for four junior faculty members in the department’s mentoring program, 2014–present

Graduate Studies Committee member, 2006–13, 2018–present

Merit Committee member, 2006–8, 2010–12 (chair 2007–2008, 2011–12)

Organizer of the American University team for the nationwide William Lowell Putnam Mathematics Competition (ran practice sessions and administered examination), 2006–13

Organizer of the student Math Club (planned meetings and speakers, and gave a mathematics presentation to students), 2009-2011

Funds Committee member (oversaw allocation of departmental funds for various purposes), 2009–2015, 2018–present

Mathematics Search Committee member, 2005–2010

Assessment Committee member (set curricular goals for the mathematics major and devised and carried out methods to assess whether such goals were met by the department), 2005–2010



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Awards Committee member (selected distinguished mathematics students to receive departmental awards, planned award ceremony), 2009–2015, 2018–present  
Frequent department representative for Preview Day, 2005–2017  
Organizer of the Department of Mathematics and Statistics session of the American University Science Graduate Student Open House, 2005–2006

#### **Bucknell University**

Curriculum Committee member (participated in the overseeing of the mathematics curriculum), 2003–2004  
Competition Committee member (duties included running of Putnam Competition practice sessions, and writing and grading of problems for college and high school mathematics competitions given by the department), 2002–2004  
Hiring Committee member, 2002–2004  
Graduate Studies and Help Sessions Committee member (participated in the running of the mathematics graduate program), 2001–2002

#### **University of Rochester**

Preliminary Examination Committee member (participated in the construction and grading of graduate preliminary examinations), 1998–2000  
Quest Committee member, (participated in the running of the “Quest” (advanced introductory level) courses offered by the department), 1998–2000

#### **University Service**

AU Core Committee member on the Quantitative Literacy Subcommittee, 2018–present  
Center for Teaching, Research, and Learning Partners in Teaching Program mentor, 2018–present  
Rank and Tenure Committee member, Department of Physics, 2018–19  
Co-organizer for the implementation of the Quantitative Literacy component of the AU Core Curriculum, 2016–17  
College of Arts and Sciences representative on the Faculty Senate, 2014–15  
Faculty Mentor (mentored a pre-tenure colleague in Faculty Mentoring Program), 2012–2015  
Misconduct Investigation Committee member, 2012–13  
Honors 101 Program Faculty Mentor (mentored small groups of honors students), 2006, 2010–11  
Ann Ferren Teaching Conference Planning Committee member, 2009, 2011–12  
University Honors Program Coordinator for the Department of Mathematics and Statistics, 2004–2013  
Panel Member in the College of Arts and Sciences Honors 101 Reception, 2006  
Pre-medical Program Mentor and Interviewer, three students, 2004–2012  
College of Arts and Sciences Educational Policy Committee member, 2004–2005

#### **Professional Service**

Reviewer for the NSA Mathematical Sciences Grant Program, 2014  
Member of the National Science Foundation grant review panel for the Algebra and Number Theory Program of the Division of Mathematical Sciences, 2012–2013  
Organizer for the conference *Characters, Liftings, and Types* funded by a grant from the National Science Foundation Focused Research Group Program, held at American University in summer 2012  
Referee for *Transactions of the American Mathematical Society*  
Referee for *Rocky Mountain Journal of Mathematics*  
Referee for *Representation Theory*  
Referee for *International Mathematics Research Notices*  
Referee for *Note di Matematica*

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Referee for the *Pacific Journal of Mathematics*  
Referee for the *Journal of the Ramanujan Mathematical Society*  
Reviewer for *Mathematical Reviews*  
Reviewer for *Zentralblatt Math*  
Reviewer for W. H. Freeman & Company

**Memberships and Professional Activities**

Member of the American Mathematical Society  
Member of the Mathematical Association of America  
Full member of the Sigma Xi

**Community and Civic Activities**

Member of the Board of Directors of Shaare Tefila Congregation (synagogue), 2014–17  
Co-organizer of the Shaare Tefila Junior Congregation (provided religious instruction to youth synagogue members), 2013–2014