

Curriculum Vitae

Personal Information:

Name: **Ramin Takloo-Bighash**

Department of Mathematics, Statistics, and Computer Science
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Education:

Ph.D. in Mathematics. Johns Hopkins University, May 2001.

Advisor: Professor Joseph A. Shalika

Thesis Title: *The Integral of Novodvorsky and the Local p -adic factors of the Spinor L -function for the Similitude Symplectic Group of Order Four*

M.A. in Mathematics. Johns Hopkins University, 1996.

B.Sc. in Mathematics. Sharif University of Technology, Tehran, Iran. September 1992 - May 1995.

Employment:

Associate Professor, University of Illinois at Chicago, starting fall 2009.

Assistant Professor, University of Illinois at Chicago, 2007-2009.

Assistant Professor, Princeton University, 2004-2007.

Instructor, Princeton University, 2001-2004.

Research:

Research Interests: Number Theory, Automorphic Forms, Arithmetic Geometry, Harmonic Analysis on Lie Groups.

Research Reports: <http://www.math.uic.edu/~rtakloo/preprints.html>

Honors:

Winner of the Teaching Assistantship Excellence Award , Krieger School of Arts and Sciences, Johns Hopkins University, 2001.

Dean's Teaching Fellowship, School of Arts and Sciences, Johns Hopkins University, Spring 2000.

Winner of the William Merrill Kelso Award of Excellence in the Teaching of Mathematics, Department of Mathematics, Johns Hopkins Univ., 1999.

Winner of the 18th National Mathematics Competition for Undergraduate Students, Sharif University of Technology, Tehran, Iran 1994.

Silver Medal Winner of the 33rd International Olympiad of Mathematics, Moscow 1992.

Grants and Scholarships:

National Security Agency Standard Grant, 2010-2012.

National Science Foundation Grant 2007-2010 (Award number DMS-0701753).

Young Investigator Award from the National Security Agency, 2006-07 (Award number 215-6406).

Young Investigator Award from the National Security Agency, 2004-05 (Award number 215-6378).

Clay Mathematics Institute Liftoff Award, Clay Mathematics Institute (Research at Johns Hopkins Univ.), summer of 2001.

Full Tuition Fellowship and Stipend, Department of Mathematics, Johns Hopkins University, 1995-2001.

Full Undergraduate Scholarship, by the Institute for Studies in Theoretical Physics and Mathematics, Tehran, Iran 1993-1995.

Publications:

Books:

1. (With Steven J. Miller), An Invitation to Modern Number Theory, Princeton University Press, 2006, xx+503 pp.
2. (Co-author) An Introduction to Mathematical Olympiads (in Farsi), Sharif University Press, Tehran, Iran 1998.

Articles:

In Progress:

1. (With Yiannis Sakellaridis) *Distribution of rational points on spherical varieties*, in preparation.
2. (With Djordje Milicevic) *On explicit base-change*, in preparation.
3. *Distributions of rational points on semi-direct products*, in preparation.

Preprint:

1. (With Daniel File) *On certain near equivalence classes of automorphic forms*, preprint (4 pages).
2. (With Atsushi Ichino and Dipendra Prasad) *Bessel periods of automorphic forms*, preprint (50 pages).
3. (With Nathan Kaplan) *Subrings of \mathbb{Z}^n* , preprint (23 pages).

Submitted:

1. (With Alice Medvedev) *Invitation to model-theoretic Galois theory*, preprint (6 pages).
2. (With Dipendra Prasad) *Bessel functionals for $\mathrm{GSp}(4)$* , preprint (46 pages).

In Press:

1. (With Benjamin Elias and Lior Silberman), *Finding minimal permutation representations of finite groups*, to appear in *Experimental Math.* (12 pages).

Published:

1. *Distribution of rational points: a survey*, *Bulletin of the Iranian Math. Soc.*, 35(2009), no. 1, 1-30.
2. *Bounds for spherical functions and arithmetic applications*, *Eisenstein Series and Applications* (Ed. W. T. Gan, S. S. Kudla, and Yu. Tschinkel), *Progress in Math.*, vol 258 (2007), 295-314.
3. (With J. A. Shalika and Yu. Tschinkel), *Distribution of rational points on compactifications of semi-simple groups*, *J. Amer. Math. Soc.* 20 (2007), 1135-1186.
4. *Spinor L -functions, theta correspondence, and Bessel coefficients* with an appendix by Philippe Michel, *Forum Math.* 19 (2007), no. 3, 487-554.
5. *The spinor L -function*, *Algebraic groups*, 121–155, *Universitätsverlag Göttingen*, Göttingen, 2007.
6. *A remark on a recent paper of Ahlgren, Brendt, Yee, and Zaharescu*, *Int. J. Number Theory* 2 (2006), no. 1, 111–114.

7. (With Dominic Lanphier), *On the Rankin-Cohen bracket of eigenforms*, J. Ramanujan Math. Soc., **19** (2004), no. 4, 253-259.
8. (With Joseph Shalika and Yuri Tschinkel), *Distribution of rational points on compactifications of groups of rank 1*, in Arithmetic of higher-dimensional algebraic varieties (Palo Alto, CA, 2002), 205–233, Progr. Math., 226, Birkhuser Boston, Boston, MA, 2004.
9. (With Joe Shalika and Yuri Tschinkel), *Rational Points and Automorphic Forms*, Contributions to automorphic forms, geometry, and number theory, 733–742, Johns Hopkins Univ. Press, Baltimore, MD, 2004.
10. *Some results on L-functions for the similitude symplectic group of order four* $GSp(4)$, in Siavash Shahshahani's Sixtieth 105- 122(ed. K. Lajevardi, P. Safari, and Y. Tabesh), May 2002.
11. *L-Function for the p-adic group $GSp(4)$* , American Journal of Mathematics, **122** (2000), no. 6, 1085-1120.

Other writing:

1. *On research and writing papers* (in Farsi), Farhang va Andisheye Riyazi (Mathematics Culture and Thought), Tehran, Iran 2007.
2. *The importance of research in math education* (in Farsi), editorial note, Nashriyeye Riyaziyat (Mathematics Magazine), Tehran, Iran 2007.
3. *Points of bounded height on algebraic varieties* (Unpublished course notes; 38 pages).
4. *A Geometric Inequality* (in Farsi), Olympiad, Tehran, Iran 1994.
5. *The Fundamental Theorem of Algebra* (in Farsi), Math. Journal of Sharif Univ., Tehran, Iran 1993.

Talks:

Address:

1. Graduation ceremony, JHU Center For Talented Youth (Princeton Program), July 2007.

Lecture Series:

1. Two talks on Eisenstein Series at the International Workshop on Number Theory in Tehran (May 2009).
2. A series of ten talks on the Distribution of Rational Points at Sharif University of Technology (Iran), June and July 2006.

3. Five talks in an undergraduate summer school (Escola Diagonal 2005) in Lisbon (Portugal), September 2005.
4. A series of four talk in the Summer School on Algebraic Groups, Gottingen (Germany), July 2005.

Conferences and workshops:

1. Special session on modular forms and automorphic forms, AMS Sectional Meeting, Boca Raton, FL, October 2009.
2. Conference on Generalizing Theta Correspondence, American Institute of Mathematics, Palo Alto July 28-August 1, 2008.
3. Special Session on Automorphic Forms: Representation Theory of p-adic and Adelic Groups, AMS Sectional Meeting, Chicago, IL, October 2007.
4. Special session on Automorphic Forms and Arithmetic Geometry, AMS Sectional Meeting, Hoboken, NJ, April 2007.
5. Workshop on Analytic Methods in Diophantine Equations (organized by David, Duke, Granville, Tschinkel), Banff, Canada, May 2006.
6. 30th Midwest Representation Theory and Automorphic Forms Conference, University of Chicago, March 2006.
7. Weekend conference in Luso (Portugal), September 2005.
8. Workshop on Eisenstein series and applications, Palo Alto (organized by W.T. Gan, S. Kudla, and Yu. Tschinkel), August 2005.
9. Special session on Analytic Number Theory and Modular Forms, AMS sectional meeting, Lawrenceville, NJ, April 2004.
10. AMS Joint Meeting Special Session on Modular Forms and Elliptic Curves, Baltimore, January 2003.
11. Workshop on Rational Points on Higher Dimensional Varieties, American Institute of Mathematics, Palo Alto, CA, December 2002.
12. PCMI Research Program on Automorphic Forms, Park City, Utah, July 2002.
13. JAMI Conference on Automorphic Forms and Shimura Varieties, JHU, March 2001.
14. Workshop on Automorphic Forms and Related Topics, Boulder, CO, March 2000.

Seminars:

- Number Theory and Algebraic Geometry seminar, Johns Hopkins, February 2009.
- Representation theory seminar, Northwestern, October 2008.
- Representation theory seminar, University of Chicago, October 2008.
- Number theory seminar, Purdue, Feb 2008.
- Number theory seminar, UW Madison, Feb 2008.
- Princeton/IAS Number Theory Seminar , May 2007.
- New York Number Theory Seminar, NYU, Feb 2007.
- Collaborative Number Theory Seminar, CUNY Graduate Center, November 2006.
- Departmental Colloquium, Center for Basic Sciences, Zanjan, Iran, July 2006.
- Departmental Colloquium, Shahid Chamran University, Iran, July 2006.
- Two talks at the IPM, Tehran, June and July 2006.
- Departmental colloquium, Towson University, April 2006.
- Special Colloquium, University of Illinois at Chicago, January 2006.
- Lie group representations seminar, UMD at College Park, November 2005.
- Joint Number Theory and Lie group seminar, Caltech November 2005.
- IAS/Princeton Number Theory Seminar, October 2005.
- Number Theory seminar, UCSD, October 2004.
- Number theory seminar, Johns Hopkins University, September 2004.
- Algebraic geometry seminar, Duke University, March 2004.
- Automorphic forms seminar, Department of Mathematics, Ohio State University, March 2004.
- “Mathematics and Postmodernism,” expository talk at Sureh Art Academy, Tehran, Iran October 2003.
- Departmental Colloquium, Department of Mathematics, Sharif University of Technology, Tehran, Iran, October 2003.
- Algebra Seminar, Brown University, April 2003.
- Automorphic Forms Seminar, Purdue University, October 2002.
- PCMI Research Program on Automorphic Forms, Park City, Utah, July 2002.
- Algebraic Geometry seminar, University of Minnesota, April 2002.
- Lie Groups Representations Seminar, University of Maryland, April 2002.
- Arithmetic Geometry Seminar, Graduate Center, CUNY, March 2002.
- Number Theory Seminar, Princeton University, Feb 2002.
- Algebra Seminar, University of Pennsylvania, Feb 2002.
- Number Theory Seminar, Johns Hopkins University, March 2001.
- Number Theory Seminar, Johns Hopkins University, October 2000.
- Lie Groups and Representation Theory Seminar, University of Maryland at College Park, May 2000.
- Workshop on Automorphic Forms and Related Topics, Boulder, CO, March 2000.
- Algebra Seminar, Department of Mathematics, Brown University, November 1999.
- Various talks at the Johns Hopkins Math Club 95-2001.

Teaching Experiences:

- MSCS, UIC: Graduate Number Theory, Graduate Representation Theory, Undergraduate Abstract Algebra, Graduate Algebra (second course), Error Correcting Codes and Cryptography, Calculus (MATH180).
- CTY, Instructor (Advanced Cryptography), Summer of 2007.
RSA, Some information theory, DES, and classical cryptosystems.
- Department of Near Eastern Studies, Princeton University: Contemporary Persian Poetry (Post WWII), Spring 2007.
- Department of Mathematics, Princeton University: Galois Theory, “Equations, Numbers, and Proofs”, Representation theory of real Lie groups (Graduate Course), Representation Theory of $GL(n)$ over a p -adic field (Graduate Course), Real Analysis, Ordinary Differential Equations, Topics in Algebra, Algebra, Complex Analysis and Applications, Rankin-Selberg Method (Graduate course), Irrational Mathematics (New Course)
- “Undergraduate Math Laboratory” (with Steven Miller), Fall 2002.
A research seminar for junior math majors. The emphasis was Diophantine approximations and Roth’s theorem.
- Graduate Course Assistant (with Akshay Venkatesh), PCMI, July 2002.
Helped Armand Borel with his graduate course ‘Automorphic forms on reductive groups’, held problem-solving sessions, and prepared lecture-notes to appear in the proceedings of the summer school.
- Department of Mathematics, JHU: Graduate Teaching Assistant (1995-2001), Undergraduate Research in Mathematics, Number Theory, Putnam Problem Solving, Irrational Numbers, William L. Putnam Competition Camp Coach (1996-2000; Hopkins’ team ranked 10 in 1998).
- CTY, Johns Hopkins University: Instructor (Individually Paced Mathematics Sequence, 1999 and 2000).
- Instructor, Shahid Soltani High School, The National Center for Talented Students, Karaj, Iran 1994.
- Instructor, The Iranian National Center for Scientific Olympiads, 1992-1995.

Visits:

- IHES, 2010 (one month), postponed.
- UCSD, October 2007. (one week)
- IPM, Tehran June-July 2006. (five weeks)

Univ. Gottingen, June-July 2005. (four weeks)
Brown University, March 2004. (one week)
Johns Hopkins, Summer 2004. (three months)
Ohio State University, March 2004. (one week)
University of Maryland at College Park, Summer 2003. (two months)
Purdue University, October 2002. (one week)

Service:

UIC:

- Member of the RAP search committee, academic year 2009-2010.
- Elected to the departmental advisory committee (2008-2010).
- Supervisor of a graduate reading course on modular forms (spring 2009).
- Series of lectures on Class Field Theory (spring 2009).
- Served on the thesis committee of Thomas Wright (Johns Hopkins), Feb 2009.
- Member of the MSCS Advisory Committee (elected), 2008-2010.
- Member of the RAP search committee, academic year 2008-2009 (search suspended).
- Coach of the UIC Putnam team, fall of 2008 (the weekly meetings continued through spring of 2009).
- One talk in the UIC ASCEND program, summer of 2008.
- Co-organizer of a summer working seminar on Arakelov Geometry and Heights, summer of 2008.
- Faculty adviser of the Iranian Student Association, UIC, since Feb 2008.
- Supervising a reading course in number theory, summer of 2008.
- Co-organizer of the Midwest Number Theory Day (with Alina Cojocaru, Izzet Coskun, and Jeremy Teitelbaum), UIC, March 7-8, 2008.
- Member of the graduate admissions committee (pure math subcommittee), UIC, 2007-2008.
- Co-organizer of the UIC Number Theory and Arithmetic Geometry seminar (with Alina Cojocaru), since January of 2008.
- Referee for the Journal of Experimental Mathematics, Advances in Mathematics, Princeton University Press, and Reviewer for Mathematical Reviews.

Princeton:

- Served on the Graduate Admissions Committee, Princeton Mathematics, 2006.
- “Freshman-Sophomore Advisor”, Wilson College, Princeton University, 2002-2007.
- Organizer of a special session on Modular Forms and Related Topics at the Lawrenceville AMS meeting with Stephen D. Miller, April 2004.
- Member of the American Mathematical Society
- Reviewer for Mathematical Reviews
- Have refereed for the American Journal of Mathematics, Transactions of the American Mathematical Society, Canadian Journal of Mathematics, and Journal

of Experimental Mathematics.

- Organizer of the IAS/Princeton Number Theory Seminar, Academic year 2002-2007.
- Organizer of an informal seminar on Perverse Sheaves, since 2004.
- Graduate thesis committee member (Farrell Brumley 2004, Lior Silberman 2005)
- Served on several graduate general exams committees at Princeton (2004-2007)
- Served on several undergraduate senior thesis committees at Princeton (2001-2007)

Students Supervised:

UIC:

- Kathy Dexter, Graduate Student, since spring of 2009.
- Christine Robinson, Graduate Student, since spring of 2009.
- Holly Krieger, Graduate Student, since summer of 2008.
- William Garcia, undergraduate, academic year 2008-2009.
- Aerielle Karr, undergraduate, academic year 2008-2009.
- John Goes, undergraduate, since fall of 2008 (Goes' research is funded by a grant from the UIC Liberal Arts and Sciences Undergraduate Research Initiative during the 2009-2010 academic year).

Princeton:

- Nathan Kaplan, Senior project "Subrings of \mathbb{Z}^n ", 2006-2007. Nathan Kaplan was awarded the Morgan Prize for Research by an undergraduate by the American Mathematical Society at the 2008 joint AMS-MAA meeting in San Diego.
- Seth Blumberg, Project on Sieve methods, summer 2006.
- Andre Negut, "A uniformity statement for Whittaker function on the p -adic $GL(n)$ ", summer 2006.
- Nathan Kaplan, Junior project on Algebraic Geometry, Spring 2006.
- Joe Zipkin, Junior project on Harmonic analysis on Lie groups, Spring 2006.
- Justin Almeida, Senior project "Li's constants and the Riemann hypothesis", Academic year 2004-2005.
- Benjamin Elias, Senior project "Minimal permutation representations of p -groups", Academic year 2004-2005.
- Matthew Michelini, Senior project "The exceptional set in the Gauss-Kuzmin theorem", Academic year 2003-2004.
- Felice Kwan, Senior project "McDonald's Formula", Academic year 2003-2004.
- Rahul Bhargava, Junior project on the Lone Runner Conjecture, Spring 2003.
- Adam Durrett, Senior project "On the modularity of a certain Galois representation", Academic year 2002-2003.
- Matthew Ong, Junior project on Class Field Theory, Spring 2002.