

# Shuichiro Takeda

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## Education

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- Ph.D, Mathematics *University of Pennsylvania, May, 2006*
- M.A., Mathematics *San Francisco State University, Aug, 2001*
- M.A., Philosophy *San Francisco State University, Jan, 2000*
- B.S., Mechanical Engineering *Tokyo University of Science, Mar, 1997*

## Professional Employments

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- Assistant Professor (Tenure-Track) *University of Missouri, Columbia, (Fall 2011- )*
- Research Assistant Professor *Purdue University, (Fall 2008-Spring 2011)*
- Postdoctoral Research Fellow *Ben Gurion University, Israel, (Fall 2007-Spring 2008)*
- Teaching Visitor *University of California, San Diego, (Fall 2006 - Spring 2007)*

## Visiting positions

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- I.H.É.S (The Institut des Hautes Études Scientifiques), France *June 2014-Jul 2014*
- I.H.É.S (The Institut des Hautes Études Scientifiques), France *Jul 2012-Aug 2012*
- Fields Institute (Jerrold E. Marsden Postdoctoral Fellow), Canada *Jan 2012-June 2012*

## Research

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### *Research Interests*

Automorphic forms and representations, Langlands program, Representation Theory,  
Number theory

### *Journal Articles*

1. (with A. Wood) Hecke algebra correspondences for the metaplectic group, (submitted)
2. On a certain metaplectic Eisenstein series and the twisted symmetric square  $L$ -function, to appear in **Math. Zeit.** (55 pages)
3. (with W. Gan) A proof of the Howe duality conjecture, to appear in **J. Amer. Math. Soc.**
4. Metaplectic tensor products of automorphic representations of  $\widetilde{GL}(r)$ , to appear in **Canad. J. Math.** (65 pages)
5. (with W. Gan) On the Howe duality conjecture in classical theta correspondence, to appear in “Advances in the Theory of Automorphic Forms and Their L-functions in honor of 60th birthday of James Cogdell”, **Contemp. Math.**, American Mathematical Society. (13 pages)
6. (with W. Gan and Y. Qiu) The regularized Siegel-Weil formula (the second term identity) and the Rallis inner product formula, **Invent. Math.** 198 (2014) 739–831. (92 pages)
7. On the lattice model of the Weil representation and the Howe duality conjecture, **J. Ramanujan Math Society**, 29, (2014) 321-378 . (67 pages)
8. The twisted symmetric square  $L$ -function for  $GL(r)$ , **Duke Math Journal** 163 (2014), 175–266. (91 pages)
9. (with W. Gan) The theta correspondences for  $GSp(4)$ , **Representation Theory** 15 (2011), 670–718. (48 pages)
10. (with W. Gan) On the Siegel-Weil formula for the second terms and non-vanishing of theta lifts from orthogonal groups, **J. Reine Angew. Math.** 659 (2011), 175–244. (69 pages)

11. (with W. Gan) The local Langlands conjecture for  $GSp(4)$ , **Annals of Math.** 173 (2011), 1841–1882. (41 pages)
12. Some local-global non-vanishing results of theta lifts for symplectic-orthogonal dual pairs, **J. Reine Angew. Math.** 657 (2010), 81–111. (30 pages)
13. (with W. Gan) The local Langlands conjecture for  $Sp(4)$ , **Int. Math. Res. Not.** (2010), 2987–3038. (51 pages)
14. (with W. Gan) On Shalika periods and a theorem of Jacquet-Martin, **Amer. J. Math.** 132 (2010), 475–528. (53 pages)
15. Some local-global non-vanishing results for theta lifts from orthogonal groups, **Trans. Amer. Math. Soc.** 361 (2009), no. 10, 5575–5599. (24 pages)

## Major Teaching Experiences

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### *Instructor*

- **University of Missouri, Columbia** (Fall 2011-present): Calculus II for life and social sciences, Elementary Number Theory, Matrix Theory, Topics in Algebra, Calculus III, Intro. Abstract Algebra, Advanced Multivariable Calculus, Basic Algebra, Calculus I
- **Purdue University** (Fall 2008 - Spring 2011): Linear Algebra for engineering students, Advanced Linear Algebra for math majors, Advanced graduate course in Number Theory
- **U.C. San Diego** (Fall 2006 - Spring 2007): Differential Equations, Linear Algebra, Vector Calculus, Calculus II&III
- **University of Pennsylvania** (Summer 2002 & 2005): Differential Equations, Calculus IV
- **San Francisco State University** (Fall 1999 - Spring 2001): Elementary Algebra, Precalculus, Business Calculus

### *Teaching Assistant*

- **University of Pennsylvania** (Spring 2002 - Spring 2005): Recitations for calculus courses
- **San Francisco State University** (Spring 2000 - Fall 2001): Recitations for calculus courses

## Awards and Grants

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- Simons Foundations Collaboration Grants (#359526) *Fall 2015 - present*
- Jerrold E. Marsden Postdoctoral Fellowship *Winter & Spring 2012, Fields Institute*
- NSF Standard Grant (DMS-1215419) *Fall 2011-Fall 2014*
- Graduate Student Fellowship *Fall 2001, Fall 2002, University of Pennsylvania*
- Graduate Student Award for Distinguished Achievement *Spring 2001, San Francisco State University*
- NSF-CIRE Fellowship *Spring 2001, San Francisco State University*
- Undergraduate Scholarship by the Japan scholarship Foundation *1994 to 1997*

## Invited Talks

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- 2015
  - Automorphic Forms Seminar *Jul. 2015, Sophia University, Japan*
  - Automorphic Forms and Representation Theory Seminar *Mar. 2015 Purdue*
  - AMS Spring Central Sectional Meeting *Mar. 2015 East Lansing*
  - Number Theory Seminar *Jan. 2015 University of Kyoto, Japan.*
- 2014
  - Journées solstice d'été 2014 *Jun. 2014 Université Paris Diderot, France.*
  - Texas-Oklahoma Representations and Automorphic forms VI *Mar. 2014 University of Oklahoma*
- 2013
  - Algebra and Combinatorics Seminar *Nov. 2013 Tulane University*
  - Algebra and Representation Theory Seminar *Nov. 2013, University of Oklahoma*

- Colloquium *Oct. 2013, University of Oklahoma*
- Banff Workshop “Whittaker Functions: Number Theory, Geometry and Physics” *Oct. 2013, BIRS, Banff, Canada*
- Pan Asian Number Theory Conference 2013 *Jul, 2013, Vietnamese Institute for Advanced Study in Mathematics, Hanoi, Vietnam*
- Texas-Oklahoma Representations and Automorphic forms IV *Mar, 2013 University of North Texas*
- 2012:
  - Number Theory and Representation Theory Seminar *Oct, 2012 University of Southern Illinois*
  - KUMUNU *Sept, 2012, Univ. Missouri, Columbia*
  - Séminaire GRFA *Jul, 2012 Jussieu, Paris, France*
  - Two-week workshop for graduate students *Jun, 2012 Morningside Center for mathematics, Beijing*
  - Number Theory Seminar *Apr, 2012 National Univ. of Singapore*
  - Number Theory and Representation Theory Seminar *Mar, 2012 University of Southern Illinois*
  - Colloquium *Mar, 2012 University of Southern Illinois*
  - Thematic Program in Galois representations *Feb, 2012 Fields Institute*
- 2011:
  - Colloquium *Feb, 2011 Univ. Northern Illinois*
  - Special Colloquium *Feb, 2011 Univ, Missouri, Columbia*
  - Number Theory Seminar *Feb, 2011 Boston University*
  - Colloquium *Jan, 2011, McMaster*
  - Special Colloquium *Jan, 2011, Univ Alberta*
- 2010:
  - Number Theory Seminar *Sept, 2010 Univ. Wisconsin, Madison*
  - Number Theory Seminar *May, 2010 UC San Diego*
- 2009:
  - Number Theory Seminar *Oct, 2009 CUNY Graduate Center*
- 2008:
  - Representation Theory Seminar *Oct, 2008 Univ. Maryland*
  - Group Theory/Lie Theory/Number Theory Seminar *Sept, 2008 Univ. Michigan*
  - Number Theory Seminar *Apr, 2008 UC San Diego*
  - Automorphic Forms Seminar *Mar, 2008 Purdue*
  - Automorphic Forms Seminar *Jan, 2008 Tel Aviv, Israel*
- 2007:
  - Number Theory and Algebraic Geometry Seminar *Dec, 2007 Ben Gurion Univ., Israel*
  - The 10th Autumn Workshop on Number Theory *Nov, 2007 Hakuba, Japan*
  - Algebra Seminar *Oct, 2007 University of Pennsylvania*
  - AMS Fall Central Section Meeting *Oct, 2007 Chicago*
  - Number Theory Seminar *Jan, 2007 Caltech*
  - AMS/MAA Joint Mathematical Meetings, Special Session *Jan, 2007 New Orleans*

## **Conferences attended**

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- 2015
  - Representation Theory, Number Theory and Invariant Theory *Jun. 2015 Yale University*
  - AMS spring sectional meeting, East Lansing *Mar. 2015, Michigan State Univ.*
- 2014
  - Midwest Representation Theory Conference *Sept. 2014, Univ. of Chicago*
  - Summer school on the GGP conjectures *Jun. 2014, Jussieu Paris*
  - Banff Workshop “Future of Trace Formulas” *Jun. 2014 BIRS, Banff, Canada*
  - Modular Forms *Apr. 2014, Oberwolfach, Germany*
  - Texas-Oklahoma Representations and Automorphic forms VI *Mar, 2014 University of Oklahoma*
  - The Joint Mathematical Meetings 2014 *Jan. 2014, Baltimore*
- 2013
  - AMS fall sectional meeting, St. Louis *Oct. 2013, Washington Univ.*

- Banff Workshop “Whittaker Functions: Number Theory, Geometry and Physics”      *Oct. 2013, BIRS, Banff, Canada*
- Pan Asian Number Theory Conference 2013      *Jul, 2013, Vietnamese Institute for Advanced Study in Mathematics, Hanoi, Vietnam*
- AIM workshop “Automorphic forms and harmonic analysis on covering groups”      *Jun, 2013, AIM Palo Alto*
- Representation Theory, Automorphic Forms, and Complex Geometry: a conference in honor of the 70th birthday of Wilfried Schmid      *May, 2013, Harvard*
- Texas-Oklahoma Representations and Automorphic forms IV      *Mar, 2013, Univ. North Texas*
- 2012:
  - KUMUNU      *Sept, 2012, Univ. Missouri, Columbia*
  - FRG Workshop and Conference on Characters, Liftings, and Types      *Jun, 2012, American Univ.*
- 2011:
  - Requiem for a lion: Conference in memory of Joseph A Shalika      *May, 2011, Johns Hopkins*
  - AMS sectional meeting      *Mar, 2011, Univ. Iowa*
  - New Directions in Automorphic Forms      *Mar, 2011, Oberwolfach, Germany*
- 2010:
  - Number Theory and Representation Theory: A conference in honor of the 60th birthday of Benedict Gross      *May, 2010, Harvard*
- 2008:
  - AMS sectional meeting      *Oct, 2008, Western Michigan Univ*
  - ARCC workshop “Generalizing theta correspondences”      *Jul, 2008, AIM Palo Alto*
  - Recent Developments in Number Theory: Selmer Groups, L-functions, and Galois Deformations      *Mar, 2008, UCLA*
- 2007:
  - The 10th Autumn Workshop on Number Theory      *Nov, 2007, Hakuba, Japan*
  - AMS Fall Central Section Meeting      *Oct, 2007 Chicago*
  - On Certain  $L$ -functions      *Aug, 2007, Purdue University*
  - ARCC workshop “The Tate conjecture”      *Jul, 2007, AIM Palo Alto*
  - AMS/MAA Joint Mathematical Meetings      *Jan, 2007, New Orleans*
- 2006 and before:
  - Recent Developments in the Arithmetic of Shimura Varieties and Arakelov Geometry      *Jul, 2006, CRM, Barcelona*
  - Automorphic Galois Representations, L-functions and Arithmetic      *Jun, 2006, Columbia*
  - Galois Theory Workshop      *Apr, 2006, University of Pennsylvania*
  - L-functions and Related Themes      *Feb, 2006, CRM, Montreal*
  - AMS/MAA Joint Mathematical Meetings      *Jan, 2006, San Antonio, Texas*
  - Intersection of Arithmetic Cycles and Automorphic Forms      *Dec, 2005, CRM, Montreal*
  - Geometry and Arithmetic, A conference on the occasion of the sixty first birthday of Pierre Deligne      *Oct, 2005, IAS*
  - Bretton Woods Workshop on Multiple Dirichlet Series      *Jul, 2005, Bretton Woods*
  - Workshop on  $p$ -adic methods in automorphic forms      *May, 2005, Columbia*
  - Arizona Winter School 2005      *Mar, 2005, University of New Mexico*
  - Arithmetic Geometry and Number Theory Conference to Honor Nicholas M. Katz on his 60th birthday      *Dec, 2003, Princeton*
  - Arizona Winter School 2003      *Mar, 2002, University of Arizona*
  - 9th Conference on Category Theory and Computer Science 2002      *Aug, 2002, University of Ottawa*

### **Conferences co-organized**

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- The special session “Automorphic Forms and Representations”      *Oct. 2015, AMS sectional meeting, Chicago*

- The workshop “the Future of Trace Formulas” *Jun. 2014, BIRS, Banff, Canada*
- The AMS special session “Recent Progress in the Langlands program” *Jan. 2014, Joint meeting, Baltimore*
- The special session “Automorphic Forms and Representation Theory” *Oct. 2013, AMS sectional meeting, St. Louis*

### **Committee Work**

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- Qualifying Examination Committee, AY 2012-2014
- Graduate Affairs Committee, AY 2012-2015
- Curriculum Committee, AY 2012-2013, AY 2014-2015
- Library Committee, AY 2014-2015