

Yifeng Liu

Curriculum Vitae

Information

name Liu, Yifeng
date of birth July 19, 1985
place of birth Shanghai, China
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Professional History

2015– Assistant Professor, Northwestern University, Evanston
2012–2015 C.L.E. Moore Instructor, Massachusetts Institute of Technology, Cambridge

Education

2007–2012 Ph.D. in Mathematics, Columbia University, New York
Adviser: Shouwu Zhang
2003–2007 B.S. in Mathematics, Peking University, Beijing

Research Interest

Number Theory, Algebraic Geometry, Automorphic Forms

Grants & Awards

2017–2020 Principal Investigator, NSF Grant DMS #1702019
2017–2019 Sloan Research Fellowships
2017–2019 AIM SQuaREs Grant
2013–2016 Principal Investigator, NSF Grant DMS #1302000 (# 1602149 after transfer)

Publication

- (with Yichao Tian) Supersingular locus of Hilbert modular varieties, arithmetic level raising, and Selmer Groups
Preprint

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- Monodromy map for tropical Dolbeault cohomology
Preprint
- Tropical cycle classes for non-Archimedean spaces and weight decomposition of de Rham cohomology sheaves
Preprint
- (with Weizhe Zheng) Enhanced adic formalism and perverse t-structures for higher Artin stacks
Preprint
- (with Weizhe Zheng) Enhanced six operations and base change theorem for Artin stacks
Preprint
- (with Weizhe Zheng) Gluing restricted nerves of ∞ -categories
Preprint
- (with Shouwu Zhang and Wei Zhang) A p -adic Waldspurger formula
Duke Mathematical Journal, to appear
- Bounding cubic-triple product Selmer groups of elliptic curves
Journal of the European Mathematical Society, to appear
- Hirzebruch–Zagier cycles and twisted triple product Selmer groups
Inventiones Mathematicae **205** (2016) 693–780
- Refined Gan–Gross–Prasad conjecture for Bessel periods
Journal für die reine und angewandte Mathematik **717** (2016) 133–194
- Relative trace formulae toward Bessel and Fourier–Jacobi periods of unitary groups
Manuscripta Mathematica **145** (2014) 1–69
- (with Binyong Sun) Uniqueness of Fourier–Jacobi models: the Archimedean case
Journal of Functional Analysis **265** (2013) 3325–3344
- On quadratic distinction of automorphic sheaves
International Mathematics Research Notices **2012** (2012) 5328–5360
- A non-archimedean analogue of Calabi–Yau theorem for totally degenerate abelian varieties
Journal of Differential Geometry **89** (2011) 87–110
- Arithmetic theta lifting and L -derivatives for unitary groups II.
Algebra and Number Theory **5** (2011) 923–1000
- Arithmetic theta lifting and L -derivatives for unitary groups I.
Algebra and Number Theory **5** (2011) 849–921

Teaching Experiences

Spring 2017 470-3 *Algebra III.*, Northwestern University
 Winter 2017 470-2 *Algebra II.*, Northwestern University
 Winter 2017 482-2 *Algebraic Number Theory I.*, Northwestern University

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- Spring 2016 482-2 *Algebraic Number Theory II.*, Northwestern University
- Fall 2015 482-1 *Algebraic Number Theory I.*, Northwestern University
- Fall 2015 224-0 *Integral Calculus of One Variable Functions*, Northwestern University
- Spring 2015 18.821 *Project Laboratory in Mathematics*, MIT
- Fall 2014 18.705 *Commutative Algebra*, MIT
- July 2014 *Mini-course on Periods and the Birch–Swinnerton-Dyer conjecture*, 2014 Workshop on Number Theory, Morningside Center of Mathematics, China
- Spring 2014 18.03 *Differential Equations*, recitation sessions 22 & 27, MIT
- Fall 2013 18.02 *Multi-variable Calculus*, recitation sessions 18 & 23, MIT
- Spring 2013 18.03 *Differential Equations*, recitation sessions 07 & 13, MIT
- Fall 2012 18.03 *Differential Equations*, recitation sessions 05 & 07, MIT
- Aug 2011 *Mini-course on Arithmetic Theta Lifting*, The 4th ILJU School of Mathematics, Pohang University of Science and Technology, South Korea
- Fall 2009 *Calculus II*, Columbia University

Invited Talks

- Dec 2017 Conference: Recent Developments on the Arithmetic of Special Values of L-functions, École polytechnique fédérale de Lausanne, Switzerland
- Nov 2017 Number Theory Seminar, University of Oregon
- Nov 2017 I-70 Algebraic Geometry Symposium, University of Kansas
- Nov 2017 Department Colloquium, University of Kansas
- Oct 2017 Department Colloquium, California Institute of Technology
- Sep 2017 Department Colloquium, Yale University
- Sep 2017 Department Colloquium, Nanjing University, China
- Jul 2017 Workshop in Number Theory, Tsinghua University, China
- Jul 2017 Number Theory Seminar, Fudan University, China
- Jun 2017 Conference: P-adic Hodge Theory and Automorphic Forms, Beijing International Center for Mathematical Research, China
- May 2017 Simons Symposia: Non-Archimedean and Tropical Geometry, Schloss Elmau, Germany
- May 2017 Arithmetic Algebraic Geometry Seminar, Yale University
- Mar 2017 Special Seminar, Universität Regensburg, Germany
- Dec 2016 Arbeitsgemeinschaft Arithmetische Geometrie, Universität Bonn, Germany
- Nov 2016 Department Colloquium, University of Michigan
- Nov 2016 Number Theory Seminar, University of Michigan
- Nov 2016 Automorphic Forms and Representation Theory Seminar, Purdue University
- Sep 2016 Arakelov Geometry – Archimedean and Non-Archimedean Aspects, Universität Regensburg, Germany

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- Aug 2016 The 7th International Congress of Chinese Mathematicians, Morningside Center of Mathematics, China
- Aug 2016 Satellite workshop in Number Theory of The 7th ICCM, Morningside Center of Mathematics, China
- Jun 2016 Number Theory Seminar, Fudan University, China
- Apr 2016 Simons Symposia: Geometric Aspects of the Trace Formula, Schloss Elmau, Germany
- Mar 2016 Global Scientist Forum, The South University of Science and Technology of China, China
- Mar 2016 Program: New Developments in Representation Theory, National University of Singapore, Singapore
- Feb 2016 Number Theory Seminar, University of Chicago
- Dec 2015 Number Theory Seminar, University of Illinois at Urbana-Champaign
- Aug 2015 Oberwolfach Workshop: Reduction of Shimura Varieties, Mathematisches Forschungsinstitut Oberwolfach, Germany
- Jun 2015 Number Theory Seminar, Morningside Center of Mathematics, China
- Jun 2015 Number Theory Seminar, Kyoto University, Japan
- May 2015 Number Theory and Algebraic Geometry Seminar, Fudan University, China
- Apr 2015 Thematic year: Number theory from A to Z, workshop on The Kudla Programme, Centre de Recherches Mathématiques, Canada
- Mar 2015 Heilbronn Seminar, University of Bristol, United Kingdom
- Feb 2015 Special Mathematics Seminar, Massachusetts Institute of Technology
- Jan 2015 Oliver Club Seminar, Cornell University
- Jan 2015 Department Colloquium, University of Illinois at Chicago
- Jan 2015 Department Colloquium, University of Minnesota
- Jan 2015 Lie Theory Seminar, University of Minnesota
- Jan 2015 Number Theory Seminar, Northwestern University
- Dec 2014 Seminar in Algebra, Johns Hopkins University
- Dec 2014 Joint IAS/PU Number Theory Seminar, Princeton University
- Dec 2014 Group, Lie and Number Theory Seminar, University of Michigan, Ann Arbor
- Dec 2014 Department Colloquium, University of Wisconsin–Madison
- Nov 2014 Thematic year: Number theory from A to Z, workshop on Counting arithmetic objects, Centre de Recherches Mathématiques, Canada
- Sep 2014 Number Theory Seminar, Massachusetts Institute of Technology
- Jul 2014 Number Theory Workshop, Morningside Center of Mathematics, China
- Jul 2014 Second ERC Research Period on Diophantine Geometry, Grand Hotel San Michele, Italy
- May 2014 Conference in memory of the late Oliver Atkin, University of Illinois at Chicago

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- Apr 2014 Oberwolfach Workshop: Modular Forms, Mathematisches Forschungsinstitut Oberwolfach, Germany
- Apr 2014 Special Number Theory Seminar, Columbia University
- Apr 2014 Number Theory Seminar, Harvard University
- Mar 2014 Karcher Colloquium, The University of Oklahoma
- Jan 2014 IAS Program on Special Cycles and p -adic L -functions, HKUST Institute for Advanced Study, Hong Kong
- Nov 2013 The Québec–Vermont Number Theory Seminar, McGill University, Canada
- Nov 2013 Johns Hopkins–University of Maryland Algebra & Number Theory Day, University of Maryland
- Aug 2013 Number Theory Seminar, Morningside Center of Mathematics, China
- Jul 2013 Pan Asian Number Theory Conference, Vietnam Institute for Advanced Study in Mathematics, Vietnam
- Jul 2013 The 6th International Congress of Chinese Mathematicians, National Taiwan University, Taiwan
- Jul 2013 Young Mathematician Forum in Arithmetic and Algebraic Geometry, East China Normal University, China
- Jun 2013 FRG Workshop: Periods of automorphic forms and applications, Stanford University
- Apr 2013 Number Theory Seminar, Harvard University
- Feb 2013 Number Theory & Algebraic Geometry Seminar, Boston College
- Dec 2012 Number Theory Seminar, University of Illinois at Chicago
- Nov 2012 Joint Columbia–CUNY–NYU Number Theory Seminar, Columbia University
- Nov 2012 Berkeley Number Theory Seminar, University of California, Berkeley
- Oct 2012 ERC Research Period on Diophantine Geometry, Centro di Ricerca Matematica Ennio De Giorgi, Italy
- Oct 2012 Algebraic Geometry Seminar, Duke University
- Sep 2012 Number Theory Seminar, Massachusetts Institute of Technology
- Dec 2011 Workshop on Arithmetic Geometry and Representation Theory, HKUST Institute for Advanced Study, Hong Kong
- Nov 2011 Joint IAS/PU Number Theory Seminar, Institute for Advanced Study
- Oct 2011 Number Theory Seminar, University of Chicago
- Oct 2011 Number Theory Seminar, Northwestern University
- Sep 2011 Algebraic Geometry Seminar, University of Wisconsin–Madison
- Sep 2011 Number Theory and Representation Theory Seminar, University of Wisconsin–Madison
- Aug 2011 The 4th ILJU School of Mathematics: Theta Festival, Pohang University of Science and Technology, South Korea

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- Aug 2011 Workshop on Algebraic and Arithmetic Geometry, Beijing International Center for Mathematical Research, China
- Mar 2011 Oberwolfach Workshop: Automorphic Forms: New Directions, Mathematisches Forschungsinstitut Oberwolfach, Germany
- Nov 2010 AMS Sectional Meeting: Special Session on Applications of Non-Archimedean Geometry, University of Richmond
- Sep 2010 Number Theory Seminar, Harvard University