

# Yingkun Li

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- CONTACT INFORMATION** Fachbereich Mathematik *Phone: +49 6151 1622468*  
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64289 Darmstadt, Germany
- PERSONAL INFORMATION** US Citizen
- RESEARCH INTERESTS** Number Theory, modular forms, theta functions, harmonic Maass forms, Eisenstein series.
- ACADEMIC EMPLOYMENTS** **Technische Universität Darmstadt**, Darmstadt, Germany.  
Assistant Professor (August 2018 – present).  
Postdoctoral Researcher (October 2014 – July 2018).  
**Johannes Gutenberg Universität Mainz**, Mainz, Germany.  
Deputy Professor (October 2022 – March 2023).  
**Universität zu Köln**, Cologne, Germany.  
Postdoctoral Researcher (January–June 2014).
- EDUCATION** **University of California, Los Angeles**, Los Angeles, California USA.  
• Ph.D. Mathematics, July 2011 – December 2013. Advisor: William Duke.  
• M.A. Mathematics, August 2009 – June 2011.  
**California Institute of Technology**, Pasadena, California USA.  
• B.S., Mathematics with Honor, September 2005 – June 2009.
- ACADEMIC VISITS** UW Madison, Wisconsin, USA, September 2019.  
Università di Torino, Turin, Italy, November 2017.  
Chalmers University of Technology, Gothenburg, Sweden, October 2016.  
KAIST, Seoul, South Korea, April 2015.  
Max Planck Institute for Mathematics, Bonn, Germany, August–September 2014.  
Math Science Center, Tsinghua University, Beijing, China, July–August, 2013.
- PUBLICATIONS**
- **G. Bogo, Y. Li**, *Span of restriction of Hilbert theta functions*, (2022), Pure and Applied Math Quarterly, to appear.
  - **Y. Li, S. Zemel**, *Shintani lifts of nearly holomorphic modular forms*, Canadian Journal of Math, pages 1-49, August (2022).
  - **Y. Li, M. Schwagenscheidt**, *Mock modular forms with integral Fourier coefficients*, Advances in Math, 399: Paper No. 108264, 30 (2022).
  - **Y. Li**, *Average CM-Values of Higher Green's Function and Factorization*, American Journal of Math, 144 (5), 1241–1298, (2022).
  - **Y. Li**, *Singular units and isogenies between CM elliptic curves*. Compositio Math. 157 (2021), no. 5, 1022–1035.
  - **Y. Li, T. Yang**, *On a conjecture of Yui and Zagier*. Algebra Number Theory 14 (2020), no. 8, 2197–2238.

- **Y. Li, H. Narita, A. Pitale**, *An explicit construction of non-tempered cusp forms on  $O(1, 8n + 1)$* , Annales math. Québec, 44 (2020), no. 2, 349–384.
- **P. Charollois, Y. Li**, *Harmonic Maass Forms associated to real quadratic fields*, Journal of European Math Society, 22 (2020), no. 4, 1115–1148.
- **Y. Li, M. Neururer**, *A magnetic modular form*, Int. J. Number Theory 15 (2019), no. 5, 907–924.
- **J. Bruinier, J. Funke, Ö. Imamoglu, Y. Li**, *Modularity of generating series of winding numbers*, Res. Math. Sci. (2018), no. 2.
- **Y. Li**, *Petersson norm of cusp form associated to real quadratic field*, Forum Math. 30 (2018), no. 5, 1097–1109.
- **Y. Li, S. Zemel**, *Shimura Lifts of weakly holomorphic modular forms*, Math. Z. 290 (2018), no. 1-2, 37–61.
- **Y. Li**, *Restriction of Coherent Hilbert Eisenstein Series*, Math. Annalen **368** (2017), no. 1-2, 317–338.
- **J. Bruinier, Y. Li**, *Heegner Divisors in Generalized Jacobians and Traces of Singular Moduli*, Algebra and Number Theory **10** (2016), no. 6, 1277–1300.
- **Y. Li**, *Real-Dihedral Harmonic Maass Forms and CM-Values of Hilbert Modular Functions*, Compositio Math. **152** (2016), no. 6, 1159–1197.
- **W. Duke, Y. Li**, *Harmonic Maass forms of Weight One*, Duke Math Journal, **164** (2015), no. 1, 39–113.
- **K. Bringmann, Y. Li, R. Rhoades**, *Asymptotics for the number of row Fishburn matrices*, European J. Combin. **41** (2014), 183–196.
- **J. Brown, Y. Li**, *Level lowering for half-integral weight modular forms*, Proc. Amer. Math. Soc. 138 (2010), 1171–1173.
- **J. Brown, Y. Li**, *Distribution of the Powers of the Partition Function modulo  $\ell^j$* , J. Number Theory 129 (2009), 2557–2568.

CONFERENCE  
PROCEEDINGS

- **Y. Li**, *Some old and new results on singular moduli*. Oberwolfach Report 57/2019.
- **Y. Li**, *Harmonic Eisenstein Series of Weight One*, conference proceedings of the workshop on  $L$ -functions and automorphic forms at Heidelberg Feb. 2016.
- **Y. Li**, *Real-dihedral harmonic Maass forms and CM-values of Hilbert modular functions*. Oberwolfach Report 22/2014.

PREPRINTS

- **S. Ehlen, Y. Li, M. Schwagenscheidt**, *Harmonic Maass forms associated with CM newforms*, (2022), preprint.
- **J. Bruinier, Y. Li, T. Yang**, *Deformed theta integral and a conjecture of Gross-Zagier*, (2022), submitted.
- **Y. Li**, *Algebraicity of higher Green function at a CM Point*, (2021), submitted.
- **Y. Li, H. Ngo, R. Rhoades**, *Renormalization and quantum modular forms, Part I: Maass wave forms*, (2013), preprint.
- **Y. Li, H. Ngo, R. Rhoades**, *Renormalization and quantum modular forms, Part II: mock theta functions*, (2013), preprint.

FUNDING AND  
AWARDS

Principal Investigator of DFG Collaborative Research Center 326 – GAUS, 2021 – 2025.  
Assistant Professor in LOEWE research unit USAG, 2018 – 2022.  
NSF Postdoctoral Fellowship, 2015 – 2018.  
NSF Graduate Research Fellowship, 2010 – 2013.  
UCLA Graduate Division Research Travel Grant, July 2013.  
AMS Graduate Students Travel Grant, Oct. 2012.  
Caltech Housner Discovery Travel Award, March 2009.  
John and Maria Laffin Trust SURF Fellowship (Caltech), June – August 2008.  
Chinese American Citizen Alliance Foundation Scholarship, 2007.

SELECTED  
ACADEMIC  
PRESENTATIONS

AMS/MAA Joint meeting, Boston, January 2023 (planned).  
Early Number Theory Researchers Workshop, Darmstadt, October 2022 (planned).  
Modular forms in number theory and beyond, Bielefeld, August 2022.  
POSTECH-PMI number theory seminar, online, May 2022.  
Northern number theory seminar, online, March 2021.  
Workshop on Modular Forms, MFO, December 2019.  
Workshop on Arithmetic and Geometric Aspects of Modular Forms, Oxford, July 2019.  
AMS/MAA Joint meeting, Baltimore, January 2019.  
Workshop on Moonshine, ESI Vienna, September 2018.  
4<sup>th</sup> workshop on automorphic forms and related topics, Alfréd Rényi Institute, Budapest, July 2018.  
Trends in Modular Forms, NIMS, Daejeon, Korea, December 2017.  
Third Japanese-German Number Theory Workshop, MPIM Bonn, November 2017.  
Joint Meeting of the German and Romanian Math Societies, Constanta, Romania, September 2017.  
AMS Sectional Meeting, University of North Texas, September 2017.  
Workshop on Indefinite Theta Functions, TCD Dublin, June 2017.  
Nordic Number Theory Network Seminar, Chalmers University of Technology, Nov. 2016.  
GoCAS Colloquium, Chalmers University of Technology, Oct. 2016.  
*L*-Functions and Automorphic Forms, Heidelberg, Feb. 2016.  
Workshop on Regulator and Modularity, Paris 6, Paris, November 2015.  
The Kudla Programme, CRM Montréal, April 2015.  
ICM 2014 Satellite Conference: Automorphic Forms and Arithmetic, POSTECH, August 2014.  
2<sup>nd</sup> EU/US Workshop on Automorphic Forms and Related Topics, University of Bristol, July 2014.  
Workshop on Modular Forms, MFO, April 2014.  
Québec-Vermont Number Theory Seminar, McGill University, Dec. 2013.  
PANTS XXI, Clemson University, Dec. 2013.  
AMS Western Sectional Meeting, University of Arizona, Oct. 2012.

Number theory seminars at Bielefeld, ETH Zürich, MPIM Bonn, HU Berlin, Columbia, Texas A&M, Tsinghua, University of Bristol, UCLA, Universität Heidelberg, Universität zu Köln, Université Paris 7, UW Madison, Zhejiang University.

LECTURE SERIES

- Unitary Modular Forms (3 Lectures), Bielefeld University, August 2022
- Toric Modular Forms (4 Lectures, with Alejandro Soto), Università di Torino, Turin, Italy, November 2017.
- Hilbert Modular Forms (4 Lectures), Chalmers University of Technology, Gothenburg, Sweden, October 2016.
- Harmonic Maass Forms (4 Lectures, with Stephan Ehlen), KAIST, Seoul, South Korea, April 2015.

SYNERGISTIC  
ACTIVITIES

Plenary Speaker of Math Day at the Beach, CSU Long Beach, March 2012.

CONFERENCE  
ORGANIZATION

- International seminar on automorphic forms, 2020–now (with Claire Burrin, Christina Röhrig, Markus Schwagenscheidt, Riccardo Zuffetti).
- Modular forms on higher rank groups, Sept. 17–20, 2019 (with Jan Bruinier and Michalis Neururer).
- Darmstadt/Frankfurt seminar:  
Noether-Lefschetz conjecture, WS 2018/2019 (with Jan Bruinier and Torsten Wedhorn).  
Toric variety and modular form, SS 2017 (with Alejandro Soto).

TEACHING  
EXPERIENCE

JGU Mainz

- Zahlentheorie, WS 2022/2023.
- Seminar on  $p$ -adic numbers, WS 2022/2023.

TU Darmstadt

- Algebraic geometry II, WS 2021/2022 (with Timo Richarz).
- Hilbert modular forms, SS 2021.
- Complex Multiplication, WS 2020/2021.
- Linear Algebra II, SS 2020.
- Linear Algebra I, WS 2019/2020.
- Seminar on Catalan’s conjecture, WS 2018/2019.
- Algebraic number theory, SS 2018.
- Seminar on elliptic curves, WS 2017/2018 (with Jan Bruinier and Markus Schwagenscheidt).
- Course assistant for analysis I and II, WS 2014/2015 and SS 2015.

Universität zu Köln

- Seminar: partition function, asymptotic expansion of modular forms, Spring 2014.

UCLA Math Department

- Instructor for honor multi-variable calculus, Fall 2013.
- Teaching Assistant Consultant, 2012 – 2013.
- Teaching Assistant for various courses (differential and integral calculus, game theory, algebraic topology), 2009 – 2012.

STUDENT THESES

Luis Bussalb (TU Darmstadt, 2021), bachelor thesis: Quadratic forms and hyperbolic space.  
Nutsa Gegelia (TU Darmstadt, 2021), master thesis: Complex multiplication and applications.  
Max Racky (TU Darmstadt, 2020), master thesis: The modularity theorem of elliptic curves with complex multiplication.  
Manuel Müller (TU Darmstadt, 2019), bachelor thesis: Modular polynomials and their computations.  
Isabel Jacob (TU Darmstadt, 2017), bachelor thesis: Elliptic curve, congruent number and  $L$ -function.  
Benjamin Engel (Universität zu Köln, 2014), Diplom thesis: concave partition function.

POSTDOCS

Dr. Christina Röhrig (TU Darmstadt, April 2022 – present)  
Dr. Gabriele Bogo (TU Darmstadt, Oct. 2020 – present)

PROFESSIONAL  
EXPERIENCE

*Sommerschule "Faszination Mathematik"*, group leader, July 2015

Supervised high school students near Heidelberg to complete a project on error correcting code.

*UCLA Math Circle*, high school group leader, September 2009 – December 2013

Organized and presented weekly math lectures aimed at local high school students.

*Canada/USA Mathcamp 2010*, mentor, Mount Holyoke College, July – August 2010

Mentored mathematically gifted high school students from around the world and lectured number theory classes.