

Yingkun Li

CONTACT INFORMATION

Max Planck Institute for Mathematics
Vivatsgasse 7
53111 Bonn, Germany

Phone: +49 228 4020
Email: yingkun@mpim-bonn.mpg.de

RESEARCH INTERESTS

Number Theory, modular forms, theta functions, harmonic Maass forms, Eisenstein series.

ACADEMIC EMPLOYMENTS

Universität Bonn, MPIM Bonn, Bonn, Germany.
Heisenberg Program (May 2024 – now).

Johannes Gutenberg Universität Mainz, Mainz, Germany.
Deputy Professor (October 2022 – March 2023).

Technische Universität Darmstadt, Darmstadt, Germany.
Assistant Professor (August 2018 – May 2024).

- W1, non-tenure track.
- Successful midterm review (Nov. 2021).

Postdoctoral Researcher (October 2014 – July 2018). Supervisor: Prof. Jan H. Bruinier.

Universität zu Köln, Cologne, Germany.
Postdoctoral Researcher (January–June 2014). Supervisor: Prof. Kathrin Bringmann.

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.

FUNDING AND AWARDS

Heisenberg program of DFG (May 2024 – now).

Principal Investigator of DFG Collaborative Research Center 326 – GAUS, 2021 – 2025.

Assistant Professor in LOEWE research unit USAG, 2018 – 2022.

NSF Postdoctoral Fellowship (\$ 150.000), 2015 – 2018.

NSF Graduate Research Fellowship (\$ 90.000), 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.

PUBLICATIONS

- J. Bruinier, Y. Li, T. Yang, *Deformed theta integral and a conjecture of Gross-Zagier*, **Forum of Mathematics, Sigma**, to appear (2024+), .
- G. Bogo, Y. Li, M. Schwagenscheidt, *Laurent expansion of meromorphic modular forms*, **Journal of London math society**, to appear (2024+).

- S. Ehlen, Y. Li, M. Schwagenscheidt, *Harmonic Maass forms associated with CM newforms*, **Crelle's journal**, vol. 2024, no. 813, 113-158, (2024).
- Y. Li, *Algebraicity of higher Green function at a CM Point*, **Invent. Math.**, 234(1):375-418 (2023).
- G. Bogo, Y. Li, *Span of restriction of Hilbert theta functions*, **Pure and Applied Math Quarterly**, vol. 19, no. 1 61-83 (2023).
- Y. Li, S. Zemel, *Shintani lifts of nearly holomorphic modular forms*, **Canadian Journal of Math**, vol. 75, issue 5, pp. 1446–1492 (2023).
- 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, *Harmonic Eisenstein Series of Weight One, L-functions and automorphic forms*, *Contrib. Math. Comput. Sci.*, 10, Springer, 2017, 171-184.
- 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 ℓ^j* , **J. Number Theory** 129 (2009), 2557–2568.

CONFERENCE
REPORTS

- Y. Li, *Some old and new results on singular moduli*. Oberwolfach Report 57/2019.
- Y. Li, *Real-dihedral harmonic Maass forms and CM-values of Hilbert modular functions*. Oberwolfach Report 22/2014.

PREPRINTS

- Y. Li, C. Röhrig, *Mock Maass forms revisited*, (2023), 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.

SELECTED
ACADEMIC
PRESENTATIONS

The 7th Workshop on Number Theory and Algebra, Daejeon, July 2025 (planned).
International Conference on Modular Forms and Their Applications, Wuhan, July 2025 (planned).
RTG Colloquium, Georg-August-Universität Göttingen, Dec. 2024 (planned).
24 Hours of Theta, King's College London and online, Sept. 2024.
Automorphic Forms in Budapest, August 2024.
Oberseminar, MPIM Bonn, July 2024.
Arithmetic Theta Series and p -adic Modular Form, June 2024.
Department colloquium, Wuhan University, October 2023.
Symposium on Automorphic Forms, Heidelberg University, April 2023.
Colloquium, Leiden University, January 2023.
AMS/MAA Joint meeting, Boston, January 2023.
Kolloquium Geometrie und Arithmetik, Mainz, November 2022.
Early Number Theory Researchers Workshop, Darmstadt, October 2022.
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.
4th 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.
Conference on 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.
2nd 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, LU Hannover, Texas A&M, Tsinghua, University of Bristol, UCLA, Universität Bonn, Universität Heidelberg, Universität zu Köln, Université Paris 7, UW Madison, Zhejiang University.

ACADEMIC VISITS Seoul National University, South Korea, February 2024.
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.

LECTURE SERIES

- Complex multiplication (3 Lectures), Seoul National University, Feb. 2024.
- 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, April 2015.

TEACHING
EXPERIENCE

JGU Mainz

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

TU Darmstadt

- Zahlentheorie für das Lehramt, SS 24.
- Algebraic geometry II, WS 23/24 (with Torsten Wedhorn).
- Topologie, SS 2023.
- Representation theory, SS 2023.
- 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.

ORGANIZATIONS	<p>Conferences</p> <ul style="list-style-type: none"> • International Workshop on Automorphic Forms, Aug. 31–Sep. 2025 (planned with Claire Burrin, Luis Garcia and Riccardo Zuffetti) • Modular forms and arithmetic geometry, TU Darmstadt, Sept. 18–22, 2023 (with Jan Bruinier, Ben Kane and Steve Kudla). • Modular forms on higher rank groups, TU Darmstadt, Sept. 17–20, 2019 (with Jan Bruinier and Michalis Neururer). <p>Seminars</p> <ul style="list-style-type: none"> • International seminar on automorphic forms, 2020–now (with Claire Burrin, Luis Garcia, Christina Röhrig, Markus Schwagenscheidt, Riccardo Zuffetti). • GAUS AG on “superconnection”, SS 2023 (with Jan Bruinier and Riccardo Zuffetti). • Ruth Moufang lectures, 2022 (with Katharina Hübner and Duco van Straten). • Darmstadt/Frankfurt seminar: <ul style="list-style-type: none"> Noether-Lefschetz conjecture, WS 2018/2019 (with Jan Bruinier and Torsten Wedhorn). Toric variety and modular form, SS 2017 (with Alejandro Soto).
POSTDOCS	<p>Dr. Christina Röhrig (TU Darmstadt, April 2022 – Sept. 2023)</p> <p>Dr. Gabriele Bogo (TU Darmstadt, Oct. 2020 – Sept. 2023)</p>
DOCTORAL STUDENTS	<p>Mingkuan Zhang (TU Darmstadt, September 2022 – March 2024)</p>
BACHELOR/MASTER STUDENTS	<p>Philipp Müller (Universität Heidelberg, 2024), master thesis: Theta Integrals for Quadratic Spaces over Real Quadratic Fields.</p> <p>Luis Bussalb (TU Darmstadt, 2021), bachelor thesis: Quadratic forms and hyperbolic space.</p> <p>Nutsa Gegelia (TU Darmstadt, 2021), master thesis: Complex multiplication and applications.</p> <p>Max Racky (TU Darmstadt, 2020), master thesis: The modularity theorem of elliptic curves with complex multiplication.</p> <p>Manuel Müller (TU Darmstadt, 2019), bachelor thesis: Modular polynomials and their computations.</p> <p>Isabel Jacob (TU Darmstadt, 2017), bachelor thesis: Elliptic curve, congruent number and L-function.</p> <p>Benjamin Engel (Universität zu Köln, 2014), Diplom thesis: concave partition function.</p>
COMMITTEE CONTRIBUTION	<p>Member on the PhD thesis committee of Jendrik Brachter (TU Darmstadt, Nov. 2023).</p> <p>Rapporteur on the PhD thesis committee of Romain Branchereau (l'École Normale Supérieure, Oct. 2022)</p>
SYNERGISTIC ACTIVITIES	<p>Co-organizing the Darmstadt math circle (Oct. 2023 - Feb. 2024).</p> <p>Plenary Speaker of Math Day at the Beach Math Competition, CSU Long Beach, March 2012.</p>
PROFESSIONAL EXPERIENCE	<p><i>Sommerschule “Faszination Mathematik”</i>, Heidelberg, group leader, July 2015</p> <p>Supervised high school students to complete a project on error correcting code.</p> <p><i>UCLA Math Circle</i>, high school group leader, September 2009 – December 2013</p> <p>Organized and presented weekly math lectures aimed at local high school students.</p> <p><i>Canada/USA Mathcamp 2010</i>, mentor, Mount Holyoke College, July – August 2010</p> <p>Mentored mathematically gifted high school students from around the world and lectured number theory classes.</p>