

## Eren Mehmet Kiral

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**CONTACT INFORMATION** RIKEN AIP Mathematical Science Team [erenmehmetkiral@protonmail.com](mailto:erenmehmetkiral@protonmail.com)  
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1-4-1 Nihonbashi, Chuo-ku Nationality: Republic of Turkey  
Tokyo 103-0027, Japan Date of Birth: 19.09.1986

**NOTES** Google Scholar ID: [user=SzYItNoAAAAJ](https://scholar.google.com/citations?user=SzYItNoAAAAJ) ORCID ID: 0000-0003-4367-338X

**RESEARCH INTERESTS** Bayesian Learning, Deep Learning, Lie groups in machine learning, automorphic forms and representations,  $L$ -functions, metaplectic forms, analytic number theory.

**EDUCATION** **Brown University**, Providence, RI  
Ph.D. in Mathematics, May 2014  
**Advisor** Jeffrey Hoffstein  
Thesis Title:  
*Spectral Theory and Shifted Convolution Sums in Analytic Number Theory*  
M.S. in Mathematics, May 2012  
**Boğaziçi University**, İstanbul, Turkey. B.Sc. in Mathematics, June 2008  
Graduated with GPA 3.93/4.00  
The Rectorate Special Award

**POSITIONS HELD** **Postdoctoral Researcher** *RIKEN AIP* June 2025–Present.  
**Project Associate Professor** *Keio University* September 2023–May 2025.  
**Special Postdoctoral Researcher (SPDR)** *RIKEN AIP, Mathematical Science Team*, Yokohama, Japan. March 2020–August 2023.  
Team Leader: Kenichi Bannai  
**JSPS Fellow** *Host Institution: Sophia University*. October 2018–February 2020.  
Host Researcher: Maki Nakasuji  
**Postdoc** *Keio University* April 2018–September 2018.  
Postdoc Mentor: Kenichi Bannai  
**Postdoc** *MSRI Semester Program: Analytic Number Theory*, Mathematical Sciences Research Institute, Berkeley CA. (Spring 2017).  
Postdoc Mentor: Dinakar Ramakrishnan  
**Visiting Assistant Professor** *Texas A&M University* (Fall 2014–August 2017)  
Postdoc Mentor: Matthew Young  
**Teaching Fellow** Brown University.  
**Graduate Member** *Automorphic Forms, Combinatorial Representation Theory and Multiple Dirichlet series*, semester program in ICERM, Providence, RI (Spring 2013)

HONORS AND  
AWARDS

2026	KAKENHI (2026FY–2028FY, 3,500,000¥)	Scientific Research (C) #26K14955
2020	SPDR (2020FY–2023FY, 3,000,000¥)	Research Budget by RIKEN
2018	KAKENHI (2018–2020, 2,300,000¥)	Grant-in-Aid for JSPS Fellows
2016	AMS-Simons Travel Grant	An award for scientific travel
2009	Graduate Fellowship, Brown University	
2009	Dora Aksoy Award	Given in recognition of excellence in undergraduate mathematics
2008	Scholarship, Vehbi Koç Foundation	Given in recognition of excellence in undergraduate mathematics
2008	First rank in the Faculty of Arts and Sciences	
2008	The Rectorate Special Award, Boğaziçi University	Given to one person from the outgoing year for academic success and outstanding public work.

PUBLICATIONS AND  
PREPRINTS

1. “Generating Input Distributions for Explaining Portfolio Optimization Pipelines”  
Authors: Batuhan Ataş, Nurşen Aydın, E. Mehmet Kiral, Ş. İlker Birbil  
(preprint: arXiv:2606.25808)
2. “Log-Normal Multiplicative Dynamics for Stable Low-Precision Training of Large Networks”  
Authors: Keigo Nishida and Eren Mehmet KIRAL and Kenichi Bannai and Mohammad Emtiyaz Khan and Thomas Möllenhoff  
*Forty-third International Conference on Machine Learning*, (ICML 2026)
3. “Generating Samples to Probe Trained Models”  
Authors: E. Mehmet Kiral, Nurşen Aydın, Ş. İlker Birbil  
(preprint: arXiv:2502.06658)
4. “The Lie-Group Bayesian Learning Rule”  
joint with Thomas Möllenhoff and M. Emtiyaz Khan.  
*The 26th International Conference on Artificial Intelligence and Statistics (AISTATS 2023)* in *Proceedings of Machine Learning Research* (PMLR) 206:3331-3352.
5. “Subconvexity for twisted  $GL(3)$   $L$ -functions”  
joint with Chan Jeong Kuan and Didier Lesesvre.  
*Acta Arithmetica* 202 (2022), 281-302.
6. “Parametrization of Kloosterman sets and  $SL_3$ -Kloosterman sums”  
joint with Maki Nakasuji.  
*Advances in Mathematics* 403 (2022), 108392.
7. “Additive twists and a conjecture by Mazur, Rubin and Stein”  
joint with Nikolaos Diamantis, Jeffrey Hoffstein and Min Lee  
*Journal of Number Theory* 209 (2020): 1-36.
8. “Level reciprocity in the twisted second moment of Rankin-Selberg  $L$ -functions”  
joint with Nickolas Andersen  
*Mathematika* Volume 64, Issue 3, (2018): 770–784.
9. “The fifth moment of modular  $L$ -functions”  
joint with Matthew Young.  
*Journal of the European Mathematical Society (JEMS)*, Volume 23, Issue 1, (2021): 237–314.
10. “Kloosterman sums and Fourier coefficients of Eisenstein series”  
joint with Matthew Young.  
*The Ramanujan Journal* Volume 49, (2019): 391-409.
11. “Oscillatory integrals with uniformity in parameters”  
joint with Ian Petrow, Matthew Young.  
*Journal de Théorie des Nombres de Bordeaux* Tome 31 No. 1 (2019): 145–159.
12. “The Voronoi formula and double Dirichlet series”  
joint with F. Zhou.  
*Algebra & Number Theory* Volume 10, No. 10, (2016):2267–2286.

13. “Opposite sign Kloosterman sum Zeta function”  
*Mathematika*, Volume 62, Issue 02, (2016): 406–429.
14. “Bounds on sup-norms of half integral weight modular forms”  
*Acta Arithmetica*, Volume 165 No. 4 (2014): 385–400.
15. “Counting square discriminants”  
joint with T. Hulse, C. I. Kuan, L. M. Lim.  
*Journal of Number Theory*, Volume 162, (2016): 255–274.
16. “Subconvexity for half-integral weight  $L$ -functions”  
*Mathematische Zeitschrift*, Volume 281, Issue 3 (2015): 689–722.
17. “The sign of Fourier coefficients of half integral weight cusp forms”  
joint with T. Hulse, C. I. Kuan, L. M. Lim  
*International Journal of Number Theory* Volume 8, No. 03 (2012): 749–762.

SELECTED  
CONFERENCES  
AND WORKSHOPS  
ATTENDED

- *Automorphic forms and Arithmetic* Mathematisches Forschungsinstitut Oberwolfach, Workshop ID: 1736. Oberwolfach, Germany. (September 2017)
- *BIRS Workshop 13w5154 Whittaker Functions: Number theory, Geometry and Physics*, Banff International Research Station. Banff, Alberta, Canada. (October 2013)
- *International Colloquium on Automorphic forms and Representations*, Tata Institute for Fundamental Research. Mumbai, India (January 2012)
- *2011 Arizona Winter School*, Arizona State University. Tuscon, AZ. (March 2011)

SERVICES

- Organized the workshop on automorphic forms and  $L$ -functions in Nesin Mathematics Village, İzmir, Selçuk, Turkey, July 30-August 5, 2018.
- Co-organized the Number Theory seminar in Texas A&M University, 2015-2017.
- Co-organized a graduate student conference at Brown funded by the AMS student chapter. (May 2013)
- Editor for “Matematik Dünyası” (World of Mathematics), a Turkish popular mathematics magazine, 2005-2014 and 2019-2020.

TEACHING  
EXPERIENCE

**Texas A&M University**, College Station, TX

Communications and Cryptography	Fall 2016
Linear Algebra	Spring 2016
Discrete Mathematics	Fall 2015
Linear Algebra	Spring 2015
Calculus I	Fall 2014

**Brown University**, Providence, RI

as *Teaching Fellow* (instructor for the course)

Calculus II	Fall 2013
Multivariable Calculus	Spring 2012, Fall 2012

as *Teaching Assistant*

Calculus I	Spring 2011, Fall 2011
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**Mathematics Village**, Şirince, Selçuk, İzmir, Turkey

*A non-profit initiative that promotes interest and provides training to bright high-school, undergraduate and graduate students*

designed and taught courses for all levels:

Prime factorization in algebraic number fields	Summer 2023
Lerch Zeta functions & Heisenberg group	Summer 2022
Riemann-Zeta and $L$ -Functions	Summer 2018
Lie Algebras	Summer 2014
Coding for high school students (python)	Summer 2014
Classical Automorphic Forms	Summer 2011
Number Theory for high school students	Summer 2011
Dedekind Rings	Summer 2010
Multivariable Calculus	Summer 2010
Hilbert Spaces	Summer 2009
Multivariable Calculus	Summer 2008
Geometric Algebra	Summer 2008
Complex Analysis	Summer 2007

**Boğaziçi University** Istanbul, Turkey  
*as Teaching Assistant*

Real Analysis Spring 2010, Fall 2009

LANGUAGES Turkish (native), English (fluent), German (beginner), Japanese (beginner).

INVITED  
TALKS

- *Kloosterman Sums for  $SL(3)$  long word element* Hong Kong University Number Theory Days (June 2025)
- *Lie Group Bayesian Learning Rule*
  - OCAMI Workshop *Statistical Theories and Machine Learning Using Geometric Methods*, Osaka, Japan (December 2023)
  - Chung-Ang University seminar*, Seoul Korea (November 2023)
  - KIAS seminar*, Seoul Korea (November 2023)
  - POSTECH MINDS seminar*, Pohang, Korea (November 2023)
  - YMC 2023, Young Mathematicians Challenge* Tokyo, Japan (March 2023)
  - Vector Institute, via Zoom (March 2023)
- *Continued Fractions* Spring/Fall Mathematics Gatherings at Bursa University via Zoom (October 2021)
- *Calculating  $\zeta$  and  $L$ -functions* Colloquium of Directed Readings Program, DRP Math Turkey, online (August 2021)
- *Cryptography* Mathematics Workshop at Ankara University, via Zoom (July 2021).
- *Kloosterman Sums for  $SL(3)$  long word element* 2020 Fall POSTECH PMI Number Theory Seminar in South Korea, via Zoom (September 2020)
- *Kloosterman sums for  $SL(3)$  Long Word Element* UCGEN online seminar, International Algebraic Geometry Joy, (September 2020)
- *Riemann Hypothesis*. In Turkish, expository. Sciences Village unsolved problems online video series (October 2020)
- *13<sup>th</sup> Young Mathematicians Conference on Zeta Functions*. Toyoma, Japan (February 2020)
- *Boğaziçi University Colloquium*, İstanbul, Turkey (January 2020)
- *Linfoot Number Theory Seminar*, Bristol, UK (December 2019)
- *RIMS Workshop 2019 "Analytic Number Theory and Related Topics"*, Kyoto, Japan (October 2019)
- *Chung-Ang University Analysis Seminar*, Seoul, Korea (March 2019)
- *KIAS number theory seminar*, Seoul, Korea (March 2019)
- *Linfoot Number Theory Seminar*, Bristol, UK (February 2019)
- *Number Theory mini-workshop at Sophia*, Tokyo, Japan (January 2019)
- *Sophia University Colloquium* Tokyo, Japan (December 2018)
- *Waseda University Number Theory Seminar* Tokyo, Japan (April 2018)
- *Mimar Sinan Güzel Sanatlar Üniversitesi* İstanbul, Turkey (November 2017)
- *Claremont McKenna College Colloquium* Claremont, CA. (April 2017)
- *Texas A&M Number Theory Seminar* College Station, TX. (November 2016)
- *Connecticut Summer School in Number Theory* Storrs, CT. (August 2016)
- *Louisiana State University Algebra and Number Theory Seminar*, Baton Rouge, LA (February 2016).
- *Rutgers University Number Theory Seminar*, New Brunswick, NJ. (December 2015).
- *SUNY at Buffalo Analysis Seminar*, Buffalo, NY. (October 2015).
- *Texas A&M University Number Theory Seminar*, College Station, TX. (September 2015).
- *Texas A&M University Number Theory Seminar*, College Station, TX. (October 2014).
- *Texas A&M University Number Theory Seminar*, College Station, TX. (April 2014).
- *Boğaziçi University Colloquium*, İstanbul, Turkey. (January 2014).
- *University of Colorado Number Theory Seminar*, Boulder, CO. (November 2013).
- *Five College Number Theory Seminar*, Amherst, MA. (September 2013).
- *21<sup>st</sup> National Mathematics Symposium*, Koç University, Turkey. (September 2008).