CONTACT

Assistant Professor of Mathematics
Duke Kunshan University
8 Duke Ave, Kunshan, Suzhou,
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EMPLOYMENT

2023.08–	Assistant Professor of Mathematics	Duke Kunshan Univ.
2023.08–	Assistant Professor of the Practice of DKU Studies	Duke Univ.
2024.07–	Adjunct of the Faculty of Graduate Studies	Dalhousie Univ.
2020.08–2023.07	Lecturer in Mathematics	Duke Kunshan Univ.
2020.08–2023.07	Assistant Prof. of the Practice	Trinity College of Arts & Sci., Duke Univ.
2019.09–2020.07	Research Associate	Dept. of Math. and Stat., Dalhousie Univ.
2017.09–2019.08	Killam Postdoc Fellow	Dept. of Math. and Stat., Dalhousie Univ.
2017.03–2017.08	Research Scientist, Johann Radon Inst. for Comp. and Appl. Math., Austrian Acad. of Sci.	
2016.06–2017.02	Postdoc Fellow	Research Institute for Symbolic Computation, Johannes Kepler Univ.

RESEARCH INTERESTS

Symbolic Computation, Number Theory, Combinatorics, Special Functions

EDUCATION

2011.08–2016.05	Tulane University, Ph.D. in Mathematics	*Advisor: Victor H. Moll*
2013.09–2014.02	Research Institute for Symbolic Computation, Johannes Kepler University, Exchange Ph.D. Student	*Advisor: Carsten Schneider*
2008.09–2010.07	Beijing Institute of Technology, Master of Science	*Advisor: Huafei Sun*
2004.09–2008.06	Beijing Institute of Technology, Bachelor of Science	*Thesis Advisor: Huafei Sun*

GRANT AWARDED

2023.07–2025.06	WHU-DKU Joint Grant Seed DKU PI of "Wuhan University-Duke Kunshan University-Dalhousie University Research Platform on Combinatorics and Number Theory"	Wuhan University and Duke Kunshan University
2023.01–2024.12	Faculty Learning Community, Center for Teaching and Learning, Duke Kunshan University	
2022.07–2024.06	WHU-DKU Joint Grant Seed Research team member of Dr. Dongmian Zou, Duke Kunshan University	Wuhan University and Duke Kunshan University
2022.01–2022.12	Gradescope Research Project Grant Using Gradescope in math courses, facilitated by Center for Teaching and Learning, Duke Kunshan University	Gradescope
2021.07–2023.06	Interdisciplinary Seed Grant Quantum algorithms for computational number theory, linear algebra, and combinatorics Joint with Dr. Myung-Joong Huang, Duke Kunshan University	Duke Kunshan University
2017.09–2019.08	Killam Research Fund Research Support for Killam Postdocs	Killam Trust @ Dalhousie University

PUBLICATIONS (While working on the projects, undergraduate students are marked with a *)

BOOK

1 H. Sun, L. Peng, Y. Cheng, D. Li, and **L. Jiu**, *Mathematical Foundations of Information Geometry*, Science Press, Beijing, 2025. ISBN: 978-7-03-080107-4.

PAPERS

39 S. Chern, **L. Jiu**, S. Li*, and L. Wang, Leading coefficient in the Hankel determinants related to binomial and q-binomial transforms, submitted for publication.

38 **L. Jiu** and D. Wang*, On b-ary binomial coefficients with negative entries, Submitted for Publication.

37 **L. Jiu** and L. Peng, Information geometry and alpha-parallel prior of the beta-logistic distribution, To Appear in *Comm. Statist. Theory Methods*.

36 S. Chern, **L. Jiu**, and I. Simonelli, A central limit theorem for a card shuffling problem, *J. Combin. Theory Ser. A* **214** (2025), Article 106048.

35 **L. Jiu** and Y. Li*, Hankel determinants of certain sequences of Bernoulli polynomials: A direct proof of an inverse matrix entry from Statistics, *Contrib. Discrete Math*. **19** (2024), 64–84.

34 Q. Chen, S. Chern, and **L. Jiu**, Multi-headed lattices and Green functions, *J. Phys. A: Math. Theor*. **57** (2024) Article 465204.

33 S. Chern and **L. Jiu**, Hankel determinants and Jacobi continued fractions for q-Euler numbers, *C. R. Math. Acad. Sci. Paris* **362** (2024), 203–216.
32 K. Dilcher and **L. Jiu**, Hankel determinants of shifted sequences of Bernoulli and Euler numbers, *Contrib. Discrete Math*. **18** (2023), 146–175.
31 Z. Bradshaw, I. Gonzalez, **L. Jiu**, V. H. Moll, and C. Vignat, Compatibility of the method of brackets with classical integration rules, *Open Math*. **21** (2023), Article number: 20220581.
30 **L. Jiu** and D. Y. H. Shi, Moments and cumulants on identities for Bernoulli and Euler numbers, *Math. Reports* **24** (2022), 643–650.
29 **L. Jiu** I. Simonelli, and H. Yue*, Loop Decompositions of Random Walks and Nontrivial Identities of Bernoulli and Euler Polynomials, *Integers* **22** (2022), A91.
28 K. Dilcher and **L. Jiu**, Hankel Determinants of sequences related to Bernoulli and Euler Polynomials, *Int. J. Number Theory* **18** (2022), 331–359.
27 K. Dilcher and **L. Jiu**, Orthogonal polynomials and Hankel determinants for certain Bernoulli and Euler polynomials, *J. Math. Anal. Appl*. **497** (2021), Article 124855.
26 I. Gonzales, **L. Jiu**, and V. H. Moll, An extension of the method of brackets. Part 2, *Open Math*. **18** (2020), 983–955.
25 **L. Jiu** and C. Koutschan, Calculation and properties of zonal polynomials, *Math. Comput. Sci*. **14** (2020), 623–640.
24 N. Takayama, **L. Jiu**, S. Kuriki, and Y. Zhang, Computations of the Expected Euler Characteristic for the Largest Eigenvalue of a Real Wishart Matrix, *J. Multivariate Anal.* **179** (2020), Article 104642.
23 **L. Jiu**, C. Vignat, and T. Wakhare, Analytic Continuation for Multiple Zeta Values using Symbolic Representations, *Int. J. Number Theory* **16** (2020), 579–602.
22 **L. Jiu** and C. Vignat, Connection coefficients for higher-order Bernoulli and Euler polynomials: a random walk approach, *Fibonacci Quart.* **57** (2019), 84–95.
21 **L. Jiu** and D. Y. H. Shi, Matrix representation for multiplicative nested sums, *Colloq. Math*. **158** (2019), 183–194.
20 **L. Jiu** and D. Y. H. Shi, Orthogonal polynomials and connection to generalized Motzkin numbers for higher-order Euler polynomials, *J. Number Theory* **199** (2019), 389–402.
19 I. Gonzalez, K. Kohl, **L. Jiu**, and V. H. Moll, The method of brackets in experimental mathematics, *Frontiers of Orthogonal Polynomials and q-Series*, Z. Nashed and X. Li eds., World Scientific Publishers, 2018.
18 **L. Jiu**, V. H. Moll, and C. Vignat, A symbolic approach to multiple zeta values at the negative integers, *J. Symbolic Comput*. **84** (2018), 1–13.
17 I. Gonzales, K. Kohl, **L. Jiu**, and V. H. Moll, An extension of the method of brackets. Part 1, *Open Math*. **15** (2017), 1181–1211.
16 **L. Jiu**, Integral representations of equally positive integer-indexed harmonic sums at infinity, *Research in Number Theory* **3** (2017), Article 3:10.
15 C. Li, E. Zhang, **L. Jiu**, and H. Sun, Optimal control on special Euclidean group via natural gradient descent algorithm, *Sci. China Inf. Sci*. **59** (2016), Article: 112203.
14 I. Gonzalez, **L. Jiu**, and V. H. Moll, Pochhammer symbol with negative indices. A new rule for the method of brackets, *Open Math*. **14** (2016), 681–686.
13 T. Amdeberhan, A. Dixit, X. Guan, **L. Jiu**, A. Kuznetsov, V. H. Moll, and C. Vignat, The integrals in Gradshteyn and Ryzhik. Part 30: trigonometric functions, *Scientia Series A: Mathematical Sciences* **27** (2016), 47–74.
12 T. Amdeberhan, A. Dixit, X. Guan, **L. Jiu**, V. H. Moll, and C. Vignat, A series involving Catalan numbers. Proofs and demonstrations, *Elem. Math*. **71** (2016), 109–121.
11 **L. Jiu** and C. Vignat, On binomial identities in arbitrary bases, *J. Integer Seq*. **19** (2016), Article 16.5.5.
10 **L. Jiu**, V. H. Moll, and C. Vignat, A symbolic approach to some identities for Bernoulli-Barnes polynomials, *Int. J. Number Theory* **12** (2016), 649–662.
9 A. Dixit, **L. Jiu**, V. H. Moll, and C. Vignat, The finite Fourier transform of classical polynomials, *J. Aust. Math. Soc*. **98** (2015), 145–160.
8 T. Amdeberhan, A. Dixit, X. Guan, **L. Jiu** and V. H. Moll, The unimodality of a polynomial coming from a rational integral. Back to the original proof, *J. Math. Anal. Appl*. **420** (2014), 1154–1166.
7 A. Byrnes*, **L. Jiu**, V. H. Moll, and C. Vignat, Recursion rules for the hypergeometric zeta functions, *Int. J. Number Theory* **10** (2014), 1761–1782.
6 **L. Jiu**, V. H. Moll, and C. Vignat, Identities for generalized Euler polynomials, Integral Transforms *Spec. Funct*. **25** (2014), 777–789.
5 Z. Zhang, H. Sun, **L. Jiu**, and L. Peng, A natural gradient algorithm for stochastic distribution systems, *Entropy* **16** (2014), 4338–4352.
4 F. Zhang, H. Sun, **L. Jiu**, and L. Peng, The arc length variational formula on the exponential manifold, *Math. Slovaca* **63** (2013), 1101–1112.
3 L. Peng, H. Sun, and **L. Jiu**, The geometric structure of the Pareto distribution, *Bol. Asoc. Mat. Venez.* **14** (2007), 5–13.

2 **L. Jiu** and H. Sun, On minimal homothetical hypersurfaces, *Colloq. Math*. 109 (2007), 239–249.
1 X. Wang and **L. Jiu**, Characterizing hypersurfaces of generalized rotation through its normal lines, *Journal of Ningde Normal University (Natural Science)* **02** (2006), 117–119.

ACADEMIC TALKS

47 **Examples of Computer Proofs: From Elementary to Recent Ones**
Invited Honours Seminar Talk, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Jan. 15, 2025.

46 **Multi-headed Lattices and Green Functions**
Invited Seminar Talk, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Oct. 8, 2024.

45 **q-Analogue on Hankel Determinants: the q-Euler Numbers and the q-Binomial Transform**
Canadian Number Theory Association XVI, Fields Institute, Toronto, ON, Canada, June 10–14, 2024.

44 **Shuffle to One, Shuffle to Normal**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Jan. 31, 2024.

43 **Random Walk Models for Identities Involving Bernoulli and Euler Polynomials**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Mar. 6, 2023.

42 **Random Walk Model on Finite Number of Sites**
Seminar, School of Mathematics, Anhui University, Online, Oct. 19, 2022.

41 **Bernoulli Symbol and Multiple Zeta Function at Non-negative Integers**
The First International Conference on Multiple Zeta Values and Related Topics, Online, Aug. 08–09, 2022.

40 **Hankel Determinants of Certain Sequences of Bernoulli and Euler Polynomials**
Seminar, Department of Mathematics, Zhejiang Sci-Tech University, Online, June 12, 2022.

39 **Bernoulli and Euler Symbols: Umbral Calculus, Random Variables, and Multiple Zeta Values**
Duke Kunshan University-Shanghai Jiao Tong University Joint Workshop for Mathematics and Data Science, Shanghai, P. R. China, Jan. 5, 2022.

38 **Random Walk Models for Non-trivial Identities Involving Bernoulli and Euler Polynomials of Higher-orders**
Suzhou Area Youth Mathematicians 2nd Annual Workshop, Soochow University, Kunshan, Suzhou, Jiangsu Province, P. R. China, Sept. 25–26, 2021.

37 **Random Walks and Identities Involving Bernoulli and Euler Polynomials of Higher-order**
Seminar, Institute of Statistics and Big Data, Renmin University of China, Beijing, P. R. China, June 18, 2021.

36 **Examples on Computer Proofs**
Seminar, Wuhan University, Wuhan, Hubei Province, P. R. China, May 28, 2021.

35 **Hankel Determinant of Sequences Related to Bernoulli and Euler Polynomials**
DKU-WHU Math and Stat Academic Conference, Wuhan University, Wuhan, Hubei Province, P. R. China, May 27, 2021.

34 **Hankel Determinant on Sequences Related to Bernoulli and Euler Polynomials**
Suzhou Area Youth Mathematicians 1st Annual Workshop, Duke Kunshan University, Kunshan, Suzhou, Jiangsu Province, P. R. China, Nov. 14–15, 2020.

33 **Three Examples on Computer Proofs**
Zu Chongzhi Colloquium Series, Duke Kunshan University, Kunshan, Suzhou, P. R. China, Nov. 6, 2020.

32 **Introduction to Four Symbolic Integration Methods: Two Examples**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Sept. 23, 2019

31 **On b-ary Binomial Coefficients**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Sept. 16, 2019

30 **Orthogonal Polynomials for Higher-order Euler Polynomials**
15th International Symposium on Orthogonal Polynomials, Special Functions and Applications, Hagenberg, Austria, July 22–26, 2019.

29 **On Harmonic Sums: Integral and Matrix Representations with Connections to Partition-theoretic Generalization of the Riemann Zeta-function and Random Walks**
Analytic and Combinatorial Number Theory: The Legacy of Ramanujan (A conference in honor of Bruce C. Berndt's 80th birthday), University of Illinois at Urbana-Champaign, Urbana, IL, U. S. A., June 6–9, 2019.

28 **Random Walk Approaches to Identities on Higher-order Bernoulli and Euler Polynomials**

American Mathematical Society Spring Southeastern Sectional Meeting, Auburn University, Auburn, AL, U. S. A., Mar. 15–17, 2019.

27 **Random Walk & Identities**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Feb. 25, 2019

26 **Matrix Representation for Multiplicative Nested Sums**
2019 Joint Mathematics Meetings, Baltimore, MD, U. S. A., Jan. 16–19, 2019.

25 **Orthogonal Polynomials for Bernoulli and Euler Polynomials**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Jan. 7, 2019

24 **Three Examples of Computer Proofs of Combinatorial Results**
Honours Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Oct. 17, 2018

23 **Matrix Representation for Multiplicative Nested Sums**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Sept. 21, 2018.

22 **Bernoulli Symbol and Sum of Powers**
6th International Congress on Mathematical Software, University of Notre Dame, Notre Dame, IN, U. S. A., July 24–27, 2018.

21 **Random Walks and Identities for High-order Bernoulli and Euler Polynomials**
18th International Conference on Fibonacci Numbers and Their Applications, Dalhousie University, Halifax, NS, Canada, July 1–8, 2018.

20 **Matrix Representations for Bernoulli and Euler Polynomials**
2018 Canadian Mathematical Society Summer Meeting, University of New Brunswick, Fredericton, NB, Canada, June 1–4, 2018.

19 **Two Sequences Related to Bernoulli and Euler Numbers**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, May 30, 2018.

18 **Hidden Walks**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Feb. 26, 2018.

17 **Introduction to Zonal Polynomials**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Jan. 22, 2018.

16 **The Probabilistic and Combinatorial Interpretations of the Bernoulli Symbol**
2017 Canadian Mathematical Society Winter Meeting, University of Waterloo, Waterloo, ON, Canada, Dec. 8–11, 2017.

15 **Bernoulli Symbol on Multiple Zeta Values at Negative Integers**
23rd Conference on Applications of Computer Algebra (Commemorating the heritage of Jonathan Michael Borwein), Jerusalem College of Technology, Jerusalem, Israel, July 17–21, 2017.

14 **Bernoulli Symbol $\mathscr{B}$: from Umbral Calculus to Random Variable and Combinatorics**
Number Theory Seminar, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Oct. 13, 2017.

13 **Visualization of Bernoulli Numbers**
Colloquium, Department of Mathematics and Statistics, Dalhousie University, Halifax, NS, Canada, Oct. 12, 2017.

12 **On Bernoulli Symbol $\mathscr{B}$**
Klagenfurt-Linz-Wien Workshop, Riefnitz, Austria, May 3–6, 2017.

11 **The Method of Brackets (MoB) and Integrating by Differentiating (IbD) Method**
Laboratoire des Signaux et Systemès, Universitė Paris Sud XI, Orsay, France, Dec. 9, 2016.

10 **"Random Walks" for Harmonic Sums**
SFB Statusseminar, Strobl, Austria, Nov. 27–30, 2016.

9 **A Hot Pot**
Algorithmic Combinatorics Seminar, Research Institute for Symbolic Computations, Johannes Kepler University, Hagenberg im Mühlkreis, Austria, Oct. 5, 2016.

8 **On Binomial Identities in Arbitrary Bases**
Beijing Key Laboratory on Mathematical Characterization, Analysis and Applications of Complex Information, Beijing Institute of Technology, Beijing, China, July 26, 2016.

7 **Random Walk: A Probabilistic and Geometric Approach to Number Theory**
International Conference on Mathematical Characterization, Analysis and Applications of Complex Information, Beijing Institute of Technology, Beijing, China, July 19–20, 2016.

6 **The Method of Brackets**
5th International Congress on Mathematical Software, The Zuse Institute Berlin, Berlin, Germany, July 11–14, 2016.

5 **The Method of Brackets**
Algorithmic Combinatorics Seminar, Research Institute for Symbolic Computations, Johannes Kepler University, Hagenberg im Mühlkreis, Austria, June 22, 2016.

4 **Binomial Identities in Arbitrary Bases**
Graduate Students Colloquium, Department of Mathematics, Tulane University, New Orleans, LA., U. S. A., Mar. 8, 2016

3 **On Bernoulli Symbol $\mathscr{B}$ and Its Applications**
Center for Combinatorics, Nankai University, Tianjin, China, July 8, 2015.

2 **Recursion Rules for the Hypergeometric Zeta Functions**
Midwest Number Theory Conference for Graduate Students and Recent PhDs, X, University of Illinois at Urbana-Champaign, Urbana, IL, U. S. A., June 3–4, 2014.

1 **Implementation of an Algorithm on Converting Sums into Nested Sums**
Laboratoire des Signaux et Systemes, Université Paris Sud XI, Orsay, France, Jan. 8, 2014.

HONORS AND AWARDS

2016	Tea Doctor (for organizing departmental Tea Time)	Depart. of Math., Tulane University
2015	Tea Master (for organizing departmental Tea Time)	Depart. of Math., Tulane University
2014	Excellence in Mathematics	Depart. of Math., Tulane University
2013	Excellent Graduate Student Teacher	Depart. of Math., Tulane University
2008	Outstanding Graduates	Beijing Institute of Technology
2007	National Scholarship	Department of Education, P. R. China
2006	China Aerospace Science and Technology Corporation Scholarship, 2nd Prize	China Aerospace Science and Technology Corporation

TEACHING EXPERIENCE

2025 Winter	MATH 6400	Integer Partitions and q-Series	Dalhousie University
2024 Fall	MATH 307	Complex Analysis	Duke Kunshan University
2023 Fall	MATH 105	Calculus	Duke Kunshan University
	MATH 202	Linear Algebra	Duke Kunshan University
	MATH 105	Calculus	Duke Kunshan University
	MATH 301	Advanced Introduction to Probability	Duke Kunshan University
2023 Spring	MATH 205	Probability and Statistics	Duke Kunshan University
	MINITERM 102	Experimental Mathematics and Symbolic Computation	Duke Kunshan University
2022 Fall	INDSTU 391	Introduction to Algebraic Geometry	Duke Kunshan University
	MATH 105	Calculus	Duke Kunshan University
	MATH 306	Number Theory	Duke Kunshan University
	MATH 301	Advanced Introduction to Probability	Duke Kunshan University
2022 Spring	INDSTU 391	Variational Quantum Algorithms	Duke Kunshan University
	MATH 201	Multivariable Calculus	Duke Kunshan University
	MATH 301	Advanced Introduction to Probability	Duke Kunshan University
	MATH 201	Multivariable Calculus	Duke Kunshan University
2021 Fall	MATH 105	Calculus	Duke Kunshan University
	INDSTU 391	Riemann Zeta-Function	Duke Kunshan University
	INDSTU 391	Quantum Algorithm	Duke Kunshan University
	MATH 306	Number Theory	Duke Kunshan University
	INDSTU 391	Combinatorics	Duke Kunshan University
2021 Spring	MATH 205	Probability and Statistics	Duke Kunshan University
	MATH 301	Advanced Introduction to Probability	Duke Kunshan University
2020 Fall	MATH 105	Calculus	Duke Kunshan University
	MATH 201	Multivariable Calculus	Duke Kunshan University
2019 Summer	MATH 1030	Matrix Theory and Linear Algebra I	Dalhousie University
2019 Winter	MATH 3080	Introduction to Complex Variables	Dalhousie University
2016 Spring	MATH 1060	Long Calculus II	Tulane University

2015 Fall	MATH 1310	Consolidated Calculus	Tulane University
2015 Spring	MATH 1210	Long Calculus I	Tulane University
2014 Summer	MATH 1160	Long Calculus II	Tulane University

RELEVANT SKILLS

Language:	Mandarin (native), English (fluent)	
Computer:	Mathematica, SageMath, Python, Maple, LaTeX, LyX	
Packages:	Zonal.sage	`https://jiulin90.github.io/Packages/Zonal.sage`
	BNE.sage	`https://jiulin90.github.io/Packages/BNE.sage`