

# Lin JIU

## Killiam Postdoctoral Fellow

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## RESEARCH INTERESTS

Symbolic Computation, Special Function, Number Theory, Combinatorics, Information Geometry

## EDUCATION

- **Tulane University**  
May 2016: [Ph. D. in Mathematics](#) Advisor: [Victor Hugo Moll](#)
  - **2014-2015** Tea Master & 2015-2016 Tea Doctor (for organizing departmental Tea Time)
  - **2013-2014** Excellence in Mathematics (Math Dept., Tulane Univ.)
  - **2012-2013** Excellent Graduate Student Teacher (Math Dept., Tulane Univ.)
- **Research Institute for Symbolic Computation, Johannes Kepler University Linz**  
Sept. 2013–Feb. 2014: Exchange Ph.D Student Advisor: [Carsten Schneider](#)
- **Beijing Institute of Technology (B. I. T.)**  
July 2010: [M. S., Mathematics](#) Advisor: [Huafei Sun](#)  
June 2008: [B. S., Mathematics](#)
  - **2008** Outstanding Graduates (Beijing Institute of Technology)
  - **2007** National Scholarship (Department of Education, P. R. China)
  - **2006** China Aerospace Science and Technology Corporation (CASC) Scholarship, Second Class (China Aerospace Science and Technology Corporation)

## ACADEMIC EMPLOYMENT

- **September 2017–August 2019(Expected)**  
[Killam Postdoctoral Fellowship](#),  
Department of Mathematics and Statistics, Dalhousie University, Halifax, Canada  
Mentor: [Karl Dilcher](#)
- **March 2017–September 2017**  
[Postdoctoral Research Scientist](#), Symbolic Computation Group, Austrian Science Fund (FWF) grant P29467-N32  
[Johann Radon Institute for Computational and Applied Mathematics](#), Austrian Academy of Sciences, Linz, Austria  
Mentor: [Christoph Koutschan](#)
- **June 2016–February 2017**  
[Post-Doc Fellow](#), Austrian Science Fund (FWF) grant, SFB F50 (F5006-N15 and F5009-N15) projects  
[Research Institute for Symbolic Computation, Johannes Kepler University Linz, Linz, Austria](#)  
Mentors: [Peter Paule](#) & [Carsten Schneider](#)

## PUBLICATIONS

24. **L. Jiu** and D. Y. Shi, Probabilistic and combinatorial interpretations for Bernoulli and Euler polynomials, Submitted for Publication.
23. **L. Jiu** and D. Y. Shi, Matrix representation for multiplicative nested sums, Submitted for Publication.
22. Y. Li, B. Li, H. Sun, and **L. Jiu**, Application of entropy in Riemannian manifolds, Submitted for Publication.
21. Y. Li, B. Li, H. Sun, and **L. Jiu**, Matrix geometric means and uncertainty relation, Submitted for Publication.
20. D. Li, H. Sun, C. Tao, and **L. Jiu**, Principal bundles and holonomy groups on statistical manifolds, Submitted for Publication.

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 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.

## INVITED TALKS

12. **Matrix Representations for Bernoulli and Euler Polynomials**  
2018 Canadian Mathematical Society Summer Meeting, Fredericton, NB, Canada, June 1–4, 2018.
11. **The Probabilistic and Combinatorial Interpretations of the Bernoulli Symbol**  
2017 Canadian Mathematical Society Winter Meeting, Waterloo, ON, Canada, Dec. 8–11, 2017.
10. **Bernoulli Symbol on Multiple Zeta Values at Negative Integers**  
23rd Conference on Applications of Computer Algebra (Commemorating the heritage of Jonathan Michael Borwein), Jerusalem, Israel, July 17–21, 2017.
9. **On Bernoulli Symbol  $\mathcal{B}$**   
Klagenfurt-Linz-Wien Workshop, Riefnitz, Austria, May 3–6, 2017.
8. **The Method of Brackets (MoB) and Integrating by Differentiating (IbD) Method**  
Laboratoire des Signaux et Systemes, Université Paris Sud XI, Orsay, France, Dec. 9, 2016.
7. **“Random Walks” for Harmonic Sums**  
SFB Statusseminar, Strobl, Austria, Nov. 27–30, 2016.
6. **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.
5. **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.

#### 4. The Method of Brackets

*The 5th International Congress on Mathematical Software (ICMS)*, The Zuse Institute Berlin (ZIB), Berlin, Germany, July 11–14, 2016.

#### 3. On Bernoulli Symbol $\mathcal{B}$ 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.

## TEACHING EXPERIENCE

### • Instructor

*Tulane University:*

Spring	2016	Long Calculus II
Fall	2015	Consolidated Calculus
Spring	2015	Long Calculus I
Summer	2014	Long Calculus II

### • Teaching Assistant

*Tulane University:*

Fall	2014	Real Analysis I
Spring	2014	Combinatorics
Spring	2013	Real Analysis I, Calculus II
Fall	2012	Calculus III, Experimental Mathematics
Spring	2012	Real Analysis I
Fall	2011	Calculus I

*Beijing Institute of Technology:* (For Special Joint Class with University of Central Lancashire, U. K., completely in English)

Spring	2011	Calculus for Engineering II
Fall	2010	Calculus for Engineering I
Spring	2010	Calculus for Engineering II
Fall	2009	Calculus for Engineering I

## RELEVANT SKILLS

- **Language:** Mandarin (native), English (fluent)
- **Computer:** Sage, Maple, Mathematica,  $\text{L}_\text{X}$ ,  $\text{L}_\text{A}\text{T}_\text{E}_\text{X}$

## REFERENCES

- **Victor Hugo Moll**, `vhm@tulane.edu`  
Prof., Dr., Department of Mathematics, Tulane University.
- **Karl Dilcher**, `dilcher@mathstat.dal.ca`  
Prof., Dr., Department of Mathematics and Statistics, Dalhousie University.
- **Peter Paule**, `Peter.Paule@risc.jku.at`  
Univ.-Prof., Dr., Director of Research Institute for Symbolic Computation, Johannes Kepler University Linz
- **Carsten Schneider**, `Carsten.Schneider@risc.jku.at`  
Priv.-Doz. Dipl.-Inf. Dr., Research Institute for Symbolic Computation, Johannes Kepler University Linz
- **Christoph Koutschan**, `Christoph.koutschan@ricam.oeaw.ac.at`  
Dr., Research Institute for Symbolic Computation, Johannes Kepler University Linz  
Research Scientist, Johann Radon Institute for Computational and Applied Mathematics, Austrian Academy of Sciences
- **Christophe Vignat**, `Christophe.VIGNAT@lss.supelec.fr`  
Prof., Dr., Laboratoire des Signaux et Systemes, Université Paris Sud XI.
- **Huafei Sun**, `huafeisun@bit.edu.cn`  
Prof., Dr., Department of Mathematics, Beijing Institute of Technology.  
Director, Beijing Key Laboratory on Mathematical Characterization, Analysis and Applications of Complex Information.