

CURRICULUM VITAE

Zhenheng Li

Department of Mathematical Sciences
University of South Carolina Aiken

EDUCATION

Mathematics

2001 : **Ph.D.**, University of Western Ontario, Canada
1988 : **M.Sc.**, Xiangtan University, Hunan, China
1983 : **B.Sc.**, Hebei Normal College, Hebei, China

Computer Science

2003 : **M.Sc.**, University of Western Ontario,
London, Ontario, Canada

PROFESSIONAL EXPERIENCE

Aug 2014 – Present : Professor
Aug 2010 – Aug 2014 : Associate Professor
Aug 2004 – Aug 2010 : Assistant Professor, Department of Mathematical Sciences,
University of South Carolina Aiken, SC, USA
May 2001 – April 2004 : Adjunct Professor (part-time)
Sept 1997 – April 2001 : Teaching Assistant, Ph.D. Candidate
Department of Mathematics,
University of Western Ontario, Canada.
June 1996 – Aug 1997 : Associate Professor
June 1991 – June 1996 : Assistant Professor
July 1988 – June 1991 : Instructor
Department of Mathematics
Hebei University, Hebei, China
Aug 1985 – July 1988 : Masters Candidate,
Department of Mathematics,
Xiangtan University, Hunan, China
July 1983 – Aug 1985 : Instructor, Department of Mathematics
Langfang Education College, Hebei, China

AWARDS AND HONORS

2005 – 2024 : Nominee for the Excellence in Teaching at USCA many times
1999 – 2001 : Ontario Graduate Scholarship, \$21,718
1997 – 1999 : President Scholarship for Graduate Study, University of
Western Ontario, \$20,000
1991 – 1996 : Excellent in Teaching Award (Annually), Hebei University

PUBLICATIONS

1. J. Feng and **Z. Li**, Orbit structures of generalized orthogonal monoids under the actions of their unit groups, *Communications in Algebra*, **51(6)** 2548-2572, Published online: 18 Jan 2023.
2. Y. Cao, J. Lei, and **Z. Li**, Orbit decompositions of orthogonal monoids and the orders of finite orthogonal monoids, *Semigroup Forum*, 96(1) 2018, 105-125.
3. **Z. Li**, Zhuo Li, and C. Mokler, Infinite-dimensional reductive monoids associated to highest weight representations of Kac-Moody groups, *Journal of Algebra*, 489 (2017) 179-240.
4. **Z. Li**, Zhuo Li, and Y. Cao, 2014, Introduction to Algebraic monoids and Renner monoids, *Algebraic Monoids, Group Embeddings, and Algebraic Combinatorics*, Fields Institute Communications 71, 141-187.
5. Y. Cao, J. Lei and **Z. Li**, 2014, The symplectic monoid, *Communications in Algebra*, Vol 42(12) 5425 – 5453.
6. Zhuo Li, **Z. Li** and Y. Cao, 2013, Conjugacy classes of Renner monoids, *Journal of Algebra*, 374, 167-180.
7. R. Bai, L. Zhang, Y. Wu and **Z. Li**, 2013, On 3-Lie algebras with abelian ideals and subalgebras, *Linear Algebra and its Applications*, 438, 2072-2082.
8. R. Bai, W. Wu, Y. Li and **Z. Li**, 2012, Module extensions of 3-Lie algebras, *Linear and Multilinear Algebra*, 60(4), 433-447.
9. R. Bai, W. Wu and **Z. Li**, 2012, Some results on metric n-Lie algebras, *Acta Mathematica Sinica, English Series*, 28(6), 1209-1220.
10. R. Bai, L. Liu and **Z. Li**, 2012, Elementary and Φ -Free Lie triple systems, *Acta Mathematica Scientia*, 32(6), 2322-2328.
11. R. Bai, J. Wang and **Z. Li**, 2011, Derivations of the 3-Lie algebra realized by $\mathfrak{gl}(n, \mathbb{C})$ *Journal of Nonlinear Mathematical Physics*, 18(1), 151-160.
12. Y. Cao, **Z. Li** and Zhuo Li, 2010, Conjugacy classes of the symplectic Renner monoid *Journal of Algebra*, 324, 1940-1951.
13. **Z. Li** and B. Torkian, 2009, Generating functions of the dual symplectic Renner monoid, *Global Journal of Pure and Applied Mathematics* 5(2), 95-100.
14. R. Bai, H. An and **Z. Li**, 2009, Centroid structures of n-Lie algebras, *Linear Algebra and Its Applications*, 430, 229-240

15. R. Bai, Z. Zhang and **Z. Li**, 2009, Representations of k -semisimple of n -Lie algebras
Algebras, *Groups and Geometries*, 26, 387-398
16. Zhuo Li, **Z. Li** and Y. Cao, 2009, Representations of the Renner monoid, *International Journal of Algebra and Computation*, 19(4), 511-525.
17. Zhuo Li, **Z. Li** and Y. Cao, Representations of the Renner monoids, *International Journal of Algebra and Computation*, 19(4), 511-525, 2009.
18. R. Bai, H. An and **Z. Li**, Centroid structures of n -Lie algebras, *Linear Algebra and Its Applications*, 430(1), 229-240, 2009.
19. **Z. Li**, Zhuo Li and Y. Cao, Representations of the symplectic rook monoid, *International Journal of Algebra and Computation*, 18(5), 837-852, 2008.
20. Zhuo Li, **Z. Li** and Y. Cao, Orders of the Renner monoids, *J. Algebra*, 301(1), 2006, 344-359.
21. **Z. Li**, Zhuo Li and Y. Cao, Enumeration of Symplectic and Orthogonal Injective Partial Transformations, *Discrete Mathematics*, 306(15), 1781-1787, 2006
22. **Z. Li**, Idempotent Lattices, Renner Monoids and Cross Section Lattices of the Special Orthogonal Algebraic Monoids, *Journal of Algebra*, 270(2), 445-458, 2003
23. **Z. Li**, Cell Decompositions of the Special Orthogonal Algebraic Monoids, *Communications in Algebra*, 31(1), 281-297, 2003
24. **Z. Li**, Cross Section Lattices and Renner Monoids of the Odd Special Orthogonal Algebraic Monoids, *Semigroup Forum*, 66(2), 273-287, 2003
25. **Z. Li** and L. Renner, The Renner Monoids and Cell Decompositions of the Symplectic Algebraic Monoids, *International Journal of Algebra and Computation*, 13(2), 111-132, 2003
26. **Z. Li**, R. Bai and Y. Ji, Relationships between Reflections Determined by Imaginary Roots and the Weyl Group for a Special GKM Algebra, *J. of Research and Exposition*, 19(3), 501-507, 1999
27. Y. Jin, **Z. Li** and Z. Zhang, Notes on Imaginary Roots and Weights For Generalized Kac-Moody Algebras, *Chinese Science Bulletin*, 42(15), 1317-1318, 1997
28. **Z. Li**, On the q -Analogue of the Algebra of Differential Operators and its Derivations, *J. of Hebei University (Science)*. 16(4), 49-51, 1996
29. Y. Jin, **Z. Li** and K. Xin, Generalized Kac-Moody algebras and their representation properties, *J. of North China Institute of Electric Power (Sci. & Eng.)* 19(1), 1995.

30. **Z. Li** and Zhuo Li, Some properties of irreducible modules over Kac-Moody algebras, J. of Hebei University (Science) 15(3), 12-15, 1995.
31. **Z. Li**, A note on imaginary roots of Kac-Moody algebras, J. of Hebei University (Science) 14(2), 60-63, 1994.
32. **Z. Li**, Some properties of modules over generalized Kac-Moody algebras, Chinese Science Bulletin 39(1), 9-13, 1994.
33. **Z. Li**, Complete Lie superalgebras, J. of . Research and Exposition 14(2), 159-164, 1994.
34. **Z. Li**, Uniqueness of the decomposition of complete Lie superalgebras, Northeastern . J., 9(3), 403-405, 1993.
35. **Z. Li**, Structures of a class of Lie algebras with chain conditions, J. of Hebei University (Science) 13(3), 64-67, 1993.
36. **Z. Li**, Structures and eigenvalues of the adjoint representation of $k(A)$, J. of Hebei University (Science) 9(5), 99-106, 1989.
37. **Z. Li**, Structures of Lie algebras with chain conditions, J. of Hebei University (Science) 9(5), 5-15, 1989.
38. Zhuo Li and **Z. Li**, On central extension of double transitively groups, J. of Xiangtan University (Science), 1988.

ACADEMIC ACTIVITIES

1. 2003 -- Present : Reviewer for mathematical Reviews of American Mathematical Society, USA.
2. May 29, 2018 : Gave a talk, Rook Monoids and Their Generalizations in Putcha-Renner Theory, at Chern Institute of Mathematics, Nankai University, China.
3. Jan 4-7, 2017 : Attended the 2017 Joint Mathematics Meetings (The Mathematical Association of America and the American Mathematical Society), Atlanta, USA.
4. Sept. 28-30, 2016 : Gave an invited talk: Infinite-dimensional reductive monoids associated to highest weight representations of Kac-Moody groups, Tulane University, USA.
5. Nov 20, 2014 : Gave an invited talk: Weight polytopes, Colloquium in the Department of Mathematics at Tulane University, USA.

6. June 21-26, 2010: Introduction to classical monoids, *The 12th National Conference on Algebra in China*, Lanzhou University, Gansu, China.
7. Dec 8-10, 2007 : Gave a talk at The Winter Meeting of the Canadian Mathematical Society, Representations of the symplectic Renner monoids, Canada.
8. July 10–14, 2006: Attended The Conference on Symmetry and Spaces, Fields Institute, Toronto, Ontario, Canada
9. Feb 13, 2006 : Attended Houghton Mifflin Mathematics Conference Charlotte, North Carolina, USA.
10. Mar 25, 2005 : Presented in The 29th Annual Society for Industrial and Applied Mathematics Southeast Atlantic Section Meeting, Mathematics in recognizing freehand sketches using pen and tablet, Citadel and College of Charleston, South Carolina, USA.
11. Oct 2001 : Attended Ontario Topology Seminar, Department of Mathematics, The University of Western Ontario, Canada.

Papers reviewed as a reviewer for Mathematical Reviews of American Mathematical Society

MR2462378 (2009h:20076) Zhang, Xia Injectivity of Clifford semigroups and their ideals. (Chinese) *J. South China Normal Univ. Natur. Sci. Ed.* **2008**, no. 3, 25--28. (Reviewer: Zhenheng Li)

MR2325880 (2008c:16028) Bernik, Janez The eigenvalue field is a splitting field. *Arch. . (Basel)* **88** (2007), no. 6, 481--490. (Reviewer: Zhenheng Li)

MR2245819 (2008b:15086) Su, Qi Fang An iterative criterion for generalized diagonally dominant matrices. (Chinese) *Gongcheng Shuxue Xuebao* **23** (2006), no. 1, 163--168. (Reviewer: Zhenheng Li)

MR2235813 (2007b:17012) Gié, Pierre-Alexandre; Pinczon, Georges; Ushirobira, Rosane The Amitsur-Levitzki theorem for the orthosymplectic Lie superalgebra $\mathfrak{osp}(1,2n)$. *J. Algebra Appl.* **5** (2006), no. 3, 307--332. (Reviewer: Zhenheng Li)

MR2166785 (2006m:20108) Cvetko-Vah, Karin Pure ∇ -bands. *Semigroup Forum* **71** (2005), no. 1, 93--101. (Reviewer: Zhenheng Li)

MR2085347 (2005f:17010) Gómez, J. R.; Khakimdjano, Yu.; Navarro, R. M. Some problems concerning to nilpotent Lie superalgebras. *J. Geom. Phys.* **51** (2004), no. 4, 473--486. (Reviewer: Zhenheng Li)

MR2192604 (2006i:17028) Elduque, Alberto New simple Lie superalgebras in characteristic 3. *J. Algebra* **296** (2006), no. 1, 196--233. (Reviewer: Zhenheng Li)

- MR2189966 (2006i:20072)** Araújo, João; Silva, Fernando C. Semigroups of matrices closed under conjugation by normal linear groups. *JP J. Algebra Number Theory Appl.* 5 (2005), no. 3, 535--545. (Reviewer: Zhenheng Li)
- MR2132582 (2005m:20155)** Choffrut, Christian; Karhumäki, Juhani Some decision problems on integer matrices. *Theor. Inform. Appl.* 39 (2005), no. 1, 125--131. (Reviewer: Zhenheng Li)
- MR2115137 (2005i:20098)** Fernandes, Vítor H.; Gomes, Gracinda M. S.; Jesus, Manuel M. Presentations for some monoids of injective partial transformations on a finite chain. *Southeast Asian Bull.* 28 (2004), no. 5, 903--918. (Reviewer: Zhenheng Li)
- MR2099935 (2005h:20148)** André, Jorge M. Regularity on near permutation semigroups. *Comm. Algebra* 32 (2004), no. 7, 2803--2826. (Reviewer: Zhenheng Li)
- MR2099579 (2005h:17019)** Gilg, Marc On deformations of the filiform Lie superalgebra $L_{n,m}$. *Comm. Algebra* 32 (2004), no. 6, 2099--2115. (Reviewer: Zhenheng Li)
- MR2056688 (2005c:17011)** Eswara Rao, S.; Zhao, K. On integrable representations for toroidal Lie superalgebras. *Kac-Moody Lie algebras and related topics*, 243--261, *Contemp. Math.* 343, Amer. Math. Soc., Providence, RI, 2004. (Reviewer: Zhenheng Li)
- MR2029040 (2004k:17011)** Batra, Punita Representations of twisted multi-loop Lie algebras. *J. Algebra* 272 (2004), no. 1, 404--416. (Reviewer: Zhenheng Li)
- MR1991464 (2004f:17026)** Petracci, Emanuela Universal representations of Lie algebras by coderivations. *Bull. Sci. Math.* 127 (2003), no. 5, 439--465. (Reviewer: Zhenheng Li)
- Eswara Rao, S. Complete reducibility of integrable modules for the affine Lie (super)algebras. *J. Algebra* 264 (2003), no. 1, 269--278. (Reviewer: Zhenheng Li)
- Wakimoto, Minoru A topic related to infinite-dimensional Lie superalgebras. *Cubo Mat. Educ.* 5 (2003), no. 1, 167--196. (Reviewer: Zhenheng Li)

GRANTS

- 2012- Fields Institute, Canada- \$17,600 (with M. Can, B. Steinberg, Q. Wang)
Title: "Algebraic Monoids, Group Embeddings and Algebraic Combinatorics"
- 2008-USCA Course Design/Redesign Initiative - Teaching release
Title "Introduction to Software Engineering"
- 2007-USCA Washington Group Intl Grant - \$6500
Title "Enrichment of Math/Computer Science Program"
- 2006- USC Aiken Research and Grants Support Program - \$3500
Title: "Orders of finite reductive monoids and generating functions"