Aihua Li, Ph.D.

September, 2023

PERSONAL INFORMATION

Aihua Li, Ph. D., Professor
Department of Mathematics
Montclair State University
Montclair, NJ 07043 U.S.A.

Office Phone: 973-655-7271
E-mail: lia@mail.montclair.edu
Web Site: www.montclair.edu/~lia

EDUCATION

Ph.D. Mathematics	University of Nebraska-Lincoln 1989-1994, Thesis Advisor: Sylvia Wiegand	1994
M.S. Mathematics	University of Nebraska-Lincoln	1991
M.S. Mathematics	University of Science and Technology, Beijing, China 1982-1984. Thesis Advisor: 柳孟辉	1984
B.S. Mathematics	University of Science and Technology, Beijing, China	1982

PROFESSIONAL EXPERIENCE

Montclair State University, Department of Mathematical Science
- Professor — September 2011 – present
- Associate Professor — September 2004 – August 2011

Loyola University New Orleans, Department of Mathematics & Computer Science
- Associate Professor — August 2000 – July 2004
- Assistant Professor — August 1995 – August 2000

Virginia Bioinformatics Institute at Virginia Tech, Virginia Tech - Department of Math.
- Visiting Research Associate Professor — September 2002 – May 2003

Bismarck State College, Department of Mathematics
- Assistant Professor — August 1994 – July 1995

University of Science & Technology Beijing — December 1984-January 1989
- Assistant Professor

HONORS AND AWARDS

- New Jersey Section Award for Distinguished College and University Teaching, MAA-New Jersey Section, April 2023;
- Sr. Stephanie Sloyan Award for Distinguished Service for the MAA-NJ, MAA - New Jersey Section, April 2021.
- Faculty Mentoring Award, Division of Mathematical Science and Computer Science, (national) Council on Undergraduate Research (CUR), June 2013.
- University Distinguished Scholar Award for 2013-2014 Academic Year, Montclair State University, 2013.
- Outstanding Service Award, Garden State Undergraduate Mathematics Conference (GSUMC), April 2013.
- AWM Mentor Grant for Mid-career Women Mathematicians, 2011
- General Membership, Mathematical Sciences Research Institute (MSRI), May 2003.
- Certificate of Honor for Support and Encouragement to Graduating Students, Loyola Senior Class & Student Government Association, 2001.
- Teaching Recognition Award, February 1992, Parent Association/Teaching Council, University of Nebraska-Lincoln.

GRANTS AWARDED (since 2000)

1. NREUP (National Research Experience for Undergraduates Program) "Summer REU at MSU", Joint by NSF (DMS-1950644 and MAA NREUP Grant #897), 2022.
2. Erasmus+ Staff Mobility for Training between Programme and Partner Countries, University of Graz and CSAM MSU, July 2021.
3. Erasmus+ Staff Mobility for Training between Programme and Partner Countries, University of Graz and CSAM MSU, June 2020.
4. Travel Grant offered by International Meeting in Commutative Algebra and its Related Areas (SIMCARA 2019), held in San Paulo, Brazil, July 2019;
5. AWM Travel Award for 2019 AWM Research Symposium held in Rice University, April 2019, by AWM from NSA Grant H98230-19-1-0001, April 2019.
6. Garden State LSAMP Phase II, NSF Grant 0912132, awarded for 7/14/2014-6/30/2019;
7. Preparation for Industrial Careers in Mathematical Science (PIC Math), sub-award of NSF grant DMS-1345499 through the MAA PIC Math project, 2016-2017.
8. Travel Grant by Dalhousie University, Canada to participate in Symposium for South Asian Women in Mathematics, October 2017.
9. NREUP (National Research Experience for Undergraduates Program) "Summer REU at MSU", Joint by NSF (DMS-1156582 and DMS-1359016) through MAA, 2014.
10. Association for Women Mathematicians (AWM) - NSF Travel Award, support to attend International Congress of Women Mathematicians held in Seoul, Korea, August 2014;
11. The 2014 Garden State Undergraduate Mathematics Conference (GSUMC), MAA "Regional Undergraduate Mathematics Conferences Program" funded by NSF DMS-0846477, DMS-0846477 (CFDA No. 47.049), Awarded May 2013.
12. NREUP (National Research Experience for Undergraduates Program) "Summer REU at MSU", Joint by NSA (H98230-13-1-0270) and NSF (DMS-1156582) through MAA, 2013.
13. Garden State Mathematics Conferences 2013-2014, NSA, awarded 2012.
14. The 2013 Garden State Undergraduate Mathematics Conference (GSUMC), MAA "Regional Undergraduate Mathematics Conferences Program" funded by NSF DMS-0846477, DMS-0846477 (CFDA No. 47.049), 2012, 2011, 2010.
15. NREUP (National Research Experience for Undergraduates Program) "Summer REU at MSU", NSF, NSA, Moody Foundation, Summer 2008;
16. NSF CURM (Center for Undergraduate Research in Mathematics) mini-grant, 2009/2010; 2007/2008.
17. Award for Undergraduate Research, Investors Savings Bank Charitable Foundation/CSAM, 2008/2009;
18. NSF Conference Grant: Nebraska Commutative Algebra Conference 2005, (Co-PI), May 2005.
19. Collaborative Research Grant for Women, Association for Women in Mathematics (AWM), Supported by the University of North Texas and NSF through Ruth Michler's POWRE grant, 2004.
20. Board of Regent Supporting Fund, "Applications of Gröbner Basis Theory," Louisiana State, 2000--2003.

REFEREED ARTICLES

1. A. Li, G. Champanerkar, "Interlace Polynomials of 4n Snowflake Graphs", *Electronic Journal of Graph Theory and Applications*, Vol. 11, No. 1, pp 165-181, 2023;
   DOI: http://dx.doi.org/10.5614/ejgta.2023.11.1.14
2. X. Wang, A. Li, "Distribution Properties and Applications of Consecutive Quadratic Residues", *Acata Academic Sinica, Chinese Series,* Vol. 66, No. 3, 2023;
3. P. Moranchel, C. Lahban, A. Li, "Epidemiologic Models of Covid-19 Dynamics in New Jersey Counties", *Proceedings of 2022 Hawaii University International Conference – Science, Technology & Engineering, Arts, Mathematics & Education*, June 7-9, 2022.

4. C. Hyra, S. Unnithan, A. Li, "Interlace Polynomials of a Special Type of Eulerian Graph", *International Journal of Engineering Research & Development,* 2022
5. G. Huang, A. Li, "Modeling Dynamics of Covid-19 Infected Population with PSO", *Communications in Computer and Information Science* book series (CCIS), SocialSec 2021: Security and Privacy in Social Networks and Big Data, Vol. 1495,75-89, 2021.
6. Xinxin Zhang, Li Xu, A. Li, "Fault Tolerant Safety Routing of Data Center Networks Based on Balanced Hypertube", *Communications in Computer and Information Science* book series (CCIS) SocialSec 2021: Security and Privacy in Social Networks and Big Data, Vol. 1495, 17-33, 2021.
7. S. Hengeveld, G. Labruna, A. Li, "Magic Squares of Squares over Finite Fields", *AMS Contemporary Mathematics Series,* Vol. 773*,* 111-122, 2021.
8. X. Wang, A. Li, "Counting Certain Quadratic Partitions of Zero Modulo a Prime Number", *Open Mathematics*, Vol. 19, Issue 1, DeGruyter, May 2021.
9. P. Li, Y. Guo, A. Li, "Tail risk contagion between international financial markets during COVID-19 pandemic", *International Review of Financial Analysis*, 73, 2021; Paper 101649 https://doi.org/10.1016/j.irfa.2020.101649, 2021.
10. Zhang, Zhi-long, L, Aihua, Li, Chu-wei, "Superpixel Segmentation by Clustering based on Finding Density Peaks", *Chinese Journal of Computers*, Vol. 43, No. 1, Jan. 2020.
11. Aihua Li, Ryan Miller, Ralph P. Tucci, A Note on the Uniqueness of Zero Divisor Graphs, *Advances in Mathematical Sciences*, AWM Research Symposium, Houston*,* Acu**,** B., Danielli**,** D., Lewicka**,** M., Pati**,** A.N., RV**,** S., Teboh-Ewungkem**,** M.I. (Eds.), Vol. 21, 173-179, 2019.
12. Chrisitna Eubanks-Turner, Aihua Li, "Interlace Polynomials of Friendship Graphs", *Electronic Journal of Graph Theory and Applications*, Vol. 6, No 2, 2018.
13. Xiaodan Zhang, Jinggai Ma, Ang Li, and Aihua Li, "Quintic Spline Smooth Semi-Supervised Support Vector Classification Machine", *Journal of Systems Engineering and Electronics*, Vol. 26(3), June 2015.
14. Christina Eubanks Turner, Aihua Li, "Graphical Properties of the Bipartite Graph of Spec(Z[x])\{0}", *Journal of Algebra Combinatorics Discrete Structures and Applications,* Vol. 2 (1), 65-73, 2015.
15. Aihua Li and Ralph Tucci, "The Cayley Graph Built Upon the Semigroup of Left Ideals of a Ring", *Journal of Shanghai Normal University (Natural Science·Mathematics)*, Vol. 43, #3, 506-510, 2014.
16. Francesca Pizzigoni and Aihua Li, "Design of Knapsack Cryptosystems using Fibonacci Numbers," *Proceedings of the 2014 International Conference on Computer, Network Security and Communication Engineering (CNSCE2014)*, pp 285-289*,* DEStech Publications, Inc., ISBN 978-1-60595-167-6, Lancaster, PA, USA, 2014.
17. Sarita Nemani, Aihua Li, "Interlace Polynomials of *n*-claw Graphs", *Journal of Combinatorial Mathematics and Computational Computing*, Vol. 88, 111-122, 2014.
18. Aihua Li and Ralph Tucci, "Zero Divisor Graphs of Upper Triangular Matrix Rings", *Communications in Algebra*, Vol. 41 (12), 4622–4636, 2013.
19. Michael K. Wilson, Aihua Li, "Solving Second Order Discrete Sturm-Liouville BVP Using Matrix Pencils, *Springer Proceedings in Mathematics & Statistics*, Springer, New York, Vol. 41, Chapter 12, 201—214, 2013.
20. Xiao-dan Zhang, Ya-li Hong, and Aihua Li, "Optimization of axial symmetrical FGM under the transient-state temperate field", *International Journal of Minerals, Metallurgy and Materials,* Vol. 19, No. 1, Pages 59-63, Jan 2012.
21. Elizabeth Arango, Aihua Li, "The Behavior of DS-divisors of Positive Integers", *International Journal of Pure and Applied Mathematics*, Vol. 70, No. 6, 2011.
22. Aihua Li, Edward Mosteig, "On the Construction of Explicit Solutions to the Matrix Equation $X^2AX = AXA$", *Electronic Journal of Linear Algebra*, Vol. 21, pp. 159-170, 2010.
23. Aihua Li, Qing Wu, "Interlace Polynomial of Ladder Graphs"*, Journal of Combinatorics, Information, and System Science*, vol. 35 No. 1-2, pages 261–273, 2010.

24. Zhang Xiaodan, Wang Fei, Deng Qin, Aihua Li, "Construction and Applications of Multivariate Separators" (in Chinese), *Acata Mathematica Applicatae Sinica*, Vol. 33 No. 2, March 2010.
25. Zhang Xiaodan, Zhao Pin-Dong, Aihua Li, "Construction of a New Fractional Chaotic System and Generalized Synchronization", *Commun. Theor. Phys.* Vol. 53, No. 6, 1105 – 1110, 2010.
26. Aihua Li, Michael Wilson, "Tracing Certain n-Dimensional Space Points", *Pi Mu Epsilon Journal*, Vol. 12, No. 10, 2009.
27. Aihua Li, Mika Munakata, "Building Mathematically", *Mathematics Teacher*, Vol. 103, Issue 1, Page 14, 2009.
28. Joseph P. Brennan, Aihua Li, Qun Huo, "Advancing Lattice Path Models for Nanoparticle Percolation of Conductivity in a Non-conductive Matrix", *Journal of Computational and Theoretical Nanoscience*, Vol. 6, No. 3, 519–524, March 2009.
29. Aihua Li, "American Classroom Teaching and Inspiration – Observation of one Sample Class Taught by U. S. Teachers", *Mathematics Curriculum - Practice and Research*, Beijing Normal University Publisher, 383 – 399, 2009.
30. John Wang, Dajin Wang, and Aihua Li, "Goal Programming and Its Variants", in Adam, F. (ed.) *Encyclopedia of Decision Making and Decision Support Technologies*, Vol. 1, A– lm, 410 – 417, Information Science Reference, Hershey, PA, 2008.
31. Xiangjun Min, Aihua Li, "Algebraic Methods in Multivariate Polynomial Interpolation", *Proceedings of the Sixth EUROSIM Congress on Modeling and Simulation*, Ljubljana, Slovenia, September 2007.
32. Betty Jean Harmsen, Aihua Li, "Discrete Sturm-Liouville Problems with Nonlinear Parameter in the Boundary Conditions", *Journal of Difference Equations and Applications*, Vol. 13, Issue 7, 639 - 653, 2007.
33. Min, Xiangjun, Zhang, Xiaodan, and Aihua Li, "Algebraic Models of Discrete Time Series", Shandong Ligong Xue Bao, *Journal of Shandon University of Technology (Natural Science Edition)*, Vol. 21, no. 5, pages 93 – 96, 2007.
34. Xiaona Pan, Fucheng Liao, Aihua Li, "Certain Linear and Radical Models of Discrete Time Series", *International Journal of Pure and Applied Mathematics,* Vol. 28, no. 4, pages 487-501, 2006.
35. Aihua Li, Irena Swanson, "Symbolic Powers of Radical Ideals", *Rocky Mountain Journal of Mathematics*, vol. 36, no. 3, 2006.
36. Guiting Li, Bingtuan Wang, and Aihua Li, "Genetic Operators Design Using Division Algorithm in the Solution Space", *Proceedings of the IASTED International Conference on Modeling and Simulation*", pages 286-290, Montreal, May, 2006.
37. Aihua Li, Serpil Saydam, "Linearity of Polynomial Models of Discrete Time Series", *Proceedings of the IASTED Fifth International Conference on Modeling, Simulation, and Optimization*", pages 125-128, Aruba, August, 2005.
38. Aihua Li, "An Algebraic Approach to Building Interpolating Polynomials", *Discrete and Continuous Dynamical System*, Suppl. Vol., pages 597-604, 2005.
39. Aihua Li, "Polynomial Models of Discrete Time Series", *Proceedings of Dynamic Systems and Applications,* vol. 4, pages 68-73, 2004.
40. Aihua Li, Chuang Peng, "Linear Transformations on Polynomial Models of Time Series", *International Journal of Pure and Applied Mathematics*, Vol. 17, no. 2, pages 235-248, 2004.
41. Aihua Li, Sindhu Unnithan, "A Sequence Constructed from Fibonacci Numbers", *Applications of Fibonacci Numbers,* Vol. 9, 159-166, ed. by Fredric T. Howard, Kluwer Academic Publisher (*Proceedings of the Tenth International Conference of Fibonacci Numbers*), 2003.
42. Betty J. Harmsen, Aihua Li, "Discrete Sturm-Liouville Problems with Parameter in the Boundary Conditions", *Journal of Difference Equations and Applications*, Vo. 8, no.11, pp. 969-981, 2002.
43. Aihua Li, Duane Randal, "Non-trivial Solutions to Certain Matrix Equations", *Electronic Journal of Linear Algebra*, Vol. 9, pp. 282-289, 2002.
44. William J. Heinzer, Aihua Li, Louis J. Ratliff Jr., and David E. Rush, "Monoidal extensions of a Cohen-MaCaulay Unique Factorization Domain", *Transactions of the American Mathematical Societ*y, 354, 1783--1791, 2002.

45. Aihua Li, "Birational Extensions of a Noetherian UFD", *Communications in Algebra,* 28(1), 209--216, 2000.
46. Aihua Li, "Prime Elements of Birational Extensions of a Noetherian UFD", *Algebra and its Applications*, Contemporary Mathematics Series, pp. 371-376, Volume 259, 2000.
47. Aihua Li, Sylvia Wiegand, "Prime Ideals in Two-dimensional Domains over the Integers", *Journal of Pure and Applied Algebra*, Vol. 130, Number 3, 313--324, 1998.
48. Aihua Li, "Exploring Group Theory Using *Mathematica* and Involving Students in Research", Proceedings of the Eleventh ICTCM (International Conference on Technology in Collegiate Mathematics), 1998.
49. Aihua Li, Sylvia Wiegand, "The Polynomial Behavior of Prime Ideals in Polynomial Rings and the Projective Line over Z", *Factorization in Integral Domains*, Lecture Notes in Pure and Applied Mathematics, pp. 383-400, Volume 189, 1997.
50. Aihua Li, "Spectra of Birational Extensions of Z[x]", *Proceedings of International Conference in Algebra and Combinatorics* (Hong Kong)", pp. 321-326, Springer, 1997.
51. Aihua Li, "Partially Ordered Sets of Prime Ideals and Prime Filtrations of Finitely Generated Modules", *Dissertation Summaries in Mathematics*, Volume I, 1-2, 1996.
52. Aihua Li, "Associated Prime Filtrations of Finitely Generated Modules over Noetherian Rings", *Communications in Algebra*, 23(4), pages 1511-1526, 1995.
53. Aihua Li, "Compound Extensions of Groups*," Journal of Beijing University of Science and Technology*, 1988.

EDITED BOOKS

1. "Perspectives and Experiences on Mentoring Undergraduate Students in Research", Volume I, Primus Special Issue, Tom Hagedorn, Aihua Li, Jan Ryctar, Dewey Taylor, Feb. 2017.
2. "Perspectives and Experiences on Mentoring Undergraduate Students in Research", Volume II, Primus Special Issue, Tom Hagedorn, Aihua Li, Jan Ryctar, Dewey Taylor, Feb. 2017.

OTHER PUBLICATIONS

1. Tom Hagedorn, Aihua Li, Jan Ryctar, Dewey Taylor, "Introduction to the Special Issue on Perspectives and Experiences on Mentoring Undergraduate Students in Research, Part I", 27(3), 315--319, *Primus*, 10.1080/10511970.2017.1289575, Feb. 2017
2. Tom Hagedorn, Aihua Li, Jan Ryctar, Dewey Taylor, "Introduction to the Special Issue on Perspectives and Experiences on Mentoring Undergraduate Students in Research, Part II", 27(4-5), 437--441, *Primus*, DOI: 10.1080/10511970.2017.1289576, Feb. 2017.
3. Aihua Li, "American Classroom Teaching and Inspiration – Observation of one Sample Class Taught by U. S. Teachers", published in *Mathematics Curriculum - Practice and Research*, Beijing Normal University Publisher, 383 – 399, 2009.
4. Xiaoying Teng, Aihua Li, "Bilingual Content-based Teaching – An Important Component for Education Globalization", Proceedings of "the 12th World Multiconference on Systemics, Cybernetics and Informatics: WMSCI 2008", Paper A960DH, Orlando, Florida, 29 – July 3, 2008.
5. Mika Munakata, Aihua Li, "Reflections on Montclair State University–Beijing Connection", *MAA Focus – the New Magazine of the Mathematical Association of America*, Vol. 8, Number 8, Nov. 2008.
6. Aihua Li, "Teaching Abstract Algebra with Involvement of Students' Research", Proceedings of M/SET (International Conference on Mathematics/Science Education & Technology), 1999.

RECENT INVITED COLLOQUIUM, CONFERENCE, OR KEY NOTE PRESENTATIONS (Since 2020)

1. Aihua Li, "Research Experiences with Advanced High School Students", oral presentation at the Contributed Paper Session "Inviting High School Students to Explore Advanced Mathematics", MathFest, MAA, August 2022;
2. "Introduction to College Mathematics Teaching in the United States - Curriculum and Differences," Invited Keynote Speech for the Chinese University Virtual Classroom Network Online Workshop, July 2022
3. Courage Lahban, Pedro Moranchel, Aihua Li, "Epidemiologic Models And Dynamics of Covid-19 In New Jersey Counties", Hawaii University International Conferences on STEM/STEAM and Education, June 2022;
4. Guangdong Huang, Aihua Li, "Modeling Dynamics of Covid-19 Infected Population with PSO", Invited presentation in the 7th International Symposium on Security and Privacy in Social Networks and Big Data (online), Fujian, China, November 2021
5. Aihua Li, "Number of Solutions to $x^2 + y^2 + z^2 = 0$ in $\mathbb{Z}_p$", invited presentation, Special Session on Integer Valued Polynomials, Conference on Rings and Polynomials 2021, Graz, Austria, July, 2021.
6. Aihua Li, Symbolic Powers of Radical Ideals, invited colloquium presentation, Institute of Mathematics, University of Graz, July, 2021.
7. Aihua Li, Christina Turner-Eubanks, Interlace Polynomials of Friendship Graphs, *MAA Special Session on Research in Graph Theory and Combinatorics by Research Experience for Undergraduate Faculty (REUF) Alumni and Their Students,* JMM, Colorado, Jan. 2020.

PROFESSIONAL SERVICE ACTIVITIES

Editorial Board:	Discrete Dynamics in Nature and Society (SCI index), 2014 - present
Editorial Board:	Bioinfo Publications Editorial Board, 2010 - present
Associate Editor:	Journal of Statistics and Mathematics, 2010 - present
Advisory Board Member:	Scientific Journals International (SJI), 2006 – present.
Council Member	Council on Undergraduate Research, June 2012 – May 2018
National Committee	MAA Committee on Undergraduate Student Activities and Chapters Appointed 1/1/2016-1/31/2022
National Committee	AWM-MAA Liaison Committee, 2/1/2019-1/31/2021
Chair of MAA-NJ	Fall 2016 – Spring 2017 (chair-elect); 2017-2019 (chair)
Vice Chair of MAA-NJ	(for Speakers) 2014 – 2017; (for Student Activities) 2010 – 2014.
MAA NJ Representative	Representing MAA-NJ in the national MAA, 2021-2022
MSU LSAMP Director	Garden State Louis Stokes Alliance for Minority Participation (LSAMP) at Montclair State University campus, sponsored by NSF, August 2015 – June 2019
Co-Director	MAA-New Jersey Section Garden State Undergraduate Mathematics Conference (GSUMC), 2009 - 2014
Undergraduate Mentor	National Alliance for Doctoral Studies in the Mathematical Sciences, 2009 - present
Mentor	American Women Mathematicians (AWM) Mentor Network
Liaison Coordinator	MAA New Jersey Section, fall 2006 – 2008
Invited Panelist:	Mathematical Association of America (MAA) Annual National Meeting panel discussion: "*Mathematics and Mathematicians in Emerging Nations*", Jan. 2007.