Luyining (Elaine) Gan

Information
: Distingushed Research Fellow
Beijing University of Posts and Telecommunications
Email: elainegan@bupt.edu.cn

Interests
: Matrix Analysis, Extremal Graph Theory, Machine Learning.

Academic Appointments

Distingushed Research Fellow — September 2023 – present
Beijing University of Posts and Telecommunications,
Beijing, China

Postdoctoral Scholar — July 2020 – June 2023
University of Nevada Reno, Reno, NV
Advisor: Prof. Raúl Rojas

Education

Ph.D. in Mathematics — Aug. 2015 – May 2020
Auburn University, Auburn, AL
Advisor: Prof. Tin-Yau Tam and Prof. Ming Liao

M.S. in Statistics — Aug. 2017 – May 2019
Auburn University, Auburn, AL
Advisor: Dr. Peng Zeng

B.S. in Mathematics and Applied Mathematics — Sept. 2011 – June 2015
Jiangxi Normal University, Jiangxi, China

Preprints

Luyining Gan, and Jie Han. *On the Keevash-Knox-Mycroft conjecture*, submitted and preprinted on arXiv: 2202.04246.

Bryan Curtis, **Luyining Gan**, Jamie Haddock, Rachel Lawrence, and Sam Spiro. *Zero Forcing with Random Sets,* submitted and preprinted on arXiv: 2208.12899.

Craig Erickson, **Luyining Gan**, Jürgen Kritschgau, Jephian C. -H. Lin, and Sam Spiro. *Complementary vanishing graphs,* submitted and preprinted on arXiv: 2207.07294.

Publications

Luyining Gan, and Sejong Kim. *Weak log-majorization between the geometric and Wasserstein means*, Journal of Mathematical Analysis and Applications (available online August 2023).

Luyining Gan, and Sejong Kim. *Revisit on spectral geometric mean,* Linear and Multilinear Algebra, (2023), doi.org/10.1080/03081087.2023.2171353.

Luyining Gan, Jie Han, Lin Sun, and Guanghui Wang. *Large $Y_{k,b}$-tilings and Hamilton ℓ-cycles in k-uniform hypergraphs,* accepted by Journal of Graph Theory (May 2023).

Luyining Gan, Xuhua Liu, and Tin-Yau Tam. *Inequalities for matrix exponentials and their extensions to Lie groups* (book chapter), *Matrix and Operator Equations and Applications (book)* pp 373–411 (available online May 2023).

Luyining Gan, and Tin-Yau Tam. *Inequalities and limits of weighted spectral geometric mean,* Linear and Multilinear Algebra, (2022), doi.org/10.1080/03081087.2022.2158294.

Luyining Gan, and Jie Han. *The decision problem for perfect matchings in dense hypergraphs,* 49th International Colloquium on Automata, Languages, and Programming (ICALP 2022), volume 229 of Leibniz International Proceedings in Informatics (LIPIcs), pages 64:1-64:16, Dagstuhl, Germany, 2022.

Luyining Gan, and Jie Han. *Hamiltonicity in Cherry-quasirandom 3-graphs,* European Journal of Combinatorics, 102(2022), 103457.

Luyining Gan, Xuhua Liu, and Tin-Yau Tam. *On two geometric means and sum of adjoint orbits,* Linear Algebra and its Applications, 631(2021), 156–173.

Luyining Gan, Wei Gao, and Jie Han. *Zero-nonzero tree patterns that allow $\mathbb{S}_n^*$,* Linear and Multilinear Algebra, (2021), doi.org/10.1080/03081087.2021.1986463.

Luyining Gan, Ming Liao, and Tin-Yau Tam. *Curvature of matrix and reductive Lie groups,* Journal of Lie Theory, 30 (2020), No. 2, 361-370.

Xiaoli Gong, **Luyining Gan**, and Zhaoyan Wu. *Adaptive impulsive cluster synchronization in community network with nonidentical nodes,* International Journal of Modern Physics C, 2016, 27(1): 1650010.

Luyining Gan, Zhaoyan Wu, and Xiaoli Gong. *Cluster synchronization of community network with nonidentical nodes via intermittent pinning control,* Chinese Physics B, 2015, 24(4): 040503.

CONFERENCES TALKS	**Invited Talk**, *Matrix inequalities and properties of means on positive definite matrices*, 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, Japan. (Aug. 20, 2023 – Aug. 25, 2023)

Invited Talk, *Log majorization and properties on matrix means of positive definite matrices*, 10th International Conference on Matrix Analysis and Applications (ICMAA 2023), Kunming, China. (Aug. 15, 2023 – Aug. 18, 2023)

Invited Talk, *Majorization and properties on spectral geometric mean*, 25th Conference of the International Linear Algebra Society (ILAS 2023), Madrid, Spain. (June 12, 2023 – June 16, 2023)

Seminar Talk, *Matrix inequalities and properties on the spectral geometric means*, Troy University, Alabama, USA. (Feb. 16, 2023)

Invited Talk, *Matrix inequalities on metric and spectral geometric means*, 2023 Joint Mathematics Meetings, Boston, Massachusetts. (Jan. 4–7, 2023)

Invited Talk, *Matrix inequalities on metric and spectral geometric means*, International Conference on Matrix Theory with Applications to Combinatorics, Optimization and Data Science, Jeju, Korea. (December 1–5, 2022)

Invited Talk, *The decision problem for perfect matchings in dense hypergraphs*, 49th International Colloquium on Automata, Languages, and Programming (ICALP 2022), Paris, France. (July 4–8, 2022)

Invited Talk, *Metric and Spectral Geometric Means of Positive Definite Matrices*, 2022 Joint Mathematics Meetings, Seattle (Virtual). (Apr. 6–8, 2022)

Seminar Talk, *Inequalities and limit of the weighted spectral geometric mean*, University of Nevada Reno, Reno, Nevada, USA. (Oct. 15, 2021)

Invited Talk, *Extensions of Horn-Steinberg's theorem on the eigenvalues of square matrix and its unitary part*, SIAM Conference on Applied Linear Algebra (Virtual). (May 17–21, 2021)

Contributed Talk, *Differential geometry on matrix groups*, 2020 Joint Mathematics Meetings, Denver, Colorado, USA. (Jan. 15–18, 2020)

Seminar Talk, *Curvature of matrix and reductive Lie groups*, University of Nevada Reno, Reno, Nevada, USA. (Dec. 17, 2019)

Invited Talk, *Differential geometry on matrix groups*, 8th International Conference on Matrix Analysis and Application, University of Nevada Reno, Reno, Nevada, USA. (July 15–18, 2019)

GRANTS, HONORS AND AWARDS		
LAA Early Career Speaker Award		2023
AMS-Simons Travel Grant – $ 5,000		2022 – 2024
AWM-NSF Travel Grant by NSF Grants DMS-2015440 – $ 1,500		2022
International Student Recognition Banquet Award, Auburn University		2020
Dean's Research Award, Auburn University		2020
AMS Graduate Student Travel Grant to 2020 JMM		2020
Excellence in Research, Auburn University.		2019
Don and Sandy Logan Fellowship, Auburn University		2019
Graduate Research and Travel Fellowship, Auburn University		2019
Dr. J. Earl Perry Endowed Summer Graduate Award, Auburn University		2018
Don and Sandy Logan Fellowship, Auburn University		2017
David and Valerie Endowed Fund for Excellence, Auburn University		2017
Top Ten University Student Award, Jiangxi Normal University		2015
National Scholarship, China		2014

TEACHING EXPERIENCE

University of Nevada Reno

Theory of Positive Integers	Spring 2023
Complex Analysis	Fall 2022
Statistical Learning (graduate level)	Spring 2022, Spring 2023
Linear Algebra	Fall 2021

Auburn University

Statistics Lab	Spring 2020
Statistics for Biological and Health Science	Spring 2020, Fall 2019
Linear Algebra	Summer 2017
Calculus III	Fall 2017
Calculus II	Spring 2019, Spring 2018
Calculus I	Summer 2019, Spring 2017, Fall 2016
College Algebra	Fall 2018
Precalculus	Summer 2018, Fall 2019

OTHER PROFESSIONAL EXPERIENCE

Session Organizer — Aug. 20 – 25, 2023
Matrix Analysis and Applications Session

10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, Japan

Session Organizer April 6 – 9, 2022
ILAS special sessions on Matrix Analysis and Applications I and II
Joint Mathematics Meetings, Virtual

Seminar Organizer Fall 2021, Spring 2022
Matrix seminar, University of Nevada Reno, Reno NV

Summer School July 2021
Approaches to Inverse Problems using Combinatorics and Linear Algebra
Mathematics Research Communities

Editorial Assistant Oct. 2015 – July 2018
Deal with daily emails and edit the accepted papers
Alabama Journal of Mathematics

MEMBERSHIPS IN
SOCIETY

American Mathematical Society (AMS)
International Linear Algebra Society (ILAS)
European Association for Theoretical Computer Science (EATCS)

REFEREE
REVIEW

ZbMath, MReview, Linear Algebra and its Applications, Linear and Multilinear Algebra, Operators and Matrices, Journal of Combinatorial Theory Series B, Southeast Asian Bulletin of Mathematics