

Jingbo Liu

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Academic Appointments

- Texas A&M University-San Antonio, San Antonio, TX, USA
Lecturer September 2018 - present
- University of Hong Kong, Pokfulam, Hong Kong
Post-Doctoral Scholar September 2016 - August 2018
- Wesleyan University, Middletown, CT, USA
Instructor/Teaching Assistant September 2010 - May 2016
- Shandong University, Jinan, Shandong, P.R. China
Instructor/Teaching Assistant September 2008 - June 2010

Education

- Ph.D. in Mathematics, Wesleyan University, Middletown, CT, USA May 2016
Adviser: Wai Kiu Chan
Thesis Title: Representations of integral Hermitian forms by sums of norms.
- Master in Mathematics, Shandong University, Jinan, Shandong, P.R. China July 2010
Advisers: Xiumin Ren and Jianya Liu
Thesis Title: On sums of a prime and six cubes of primes in short intervals. (in Chinese)
- Bachelor in Mathematics, Hebei Normal University, Shijiazhuang, Hebei, P.R. China June 2007
Project Title: On the similar canonical form of general matrices. (in Chinese)

Publications

- (1.) (Qi Han and **Jingbo Liu**)
Algebraic differential independence regarding the Riemann ζ -function and the Euler Γ -function.
Appearing in Journal of Number Theory.
<https://www.sciencedirect.com/science/article/pii/S0022314X20300147>
- (2.) (Ben Kane and **Jingbo Liu**)
Universal sums of m -gonal numbers.
Appearing in International Mathematics Research Notices.
<https://academic.oup.com/imrn/advance-article-abstract/doi/10.1093/imrn/rnz003/5345052>

(3.) (Qi Han and **Jingbo Liu**)

On differential independence of ζ and Γ .

Appearing in Annales Polonici Mathematici.

<https://www.impan.pl/en/publishing-house/journals-and-series/annales-polonici-mathematici/online/113414/on-differential-independence-of-boldsymbol-zeta-and-boldsymbol-vargamma>

(4.) (Wei Chen, Qi Han, and **Jingbo Liu**)

On Fermat Diophantine functional equations, little Picard theorem and beyond.

Aequationes Mathematicae, 93 (2019), 425-432.

(5.) (Constantin Nicolae Beli, Wai Kiu Chan, María Inés Icaza, and **Jingbo Liu**)

On a Waring's problem for quadratic and Hermitian forms.

Transactions of the American Mathematical Society, 371 (2019), 5505-5527.

(6.) (**Jingbo Liu** and Alicia Marino)

Strictly regular ternary Hermitian forms.

Journal of Number Theory, 168 (2016), 374-385.

(7.) (**Jingbo Liu**)

Representations of integral Hermitian forms by sums of norms.

Ph.D. Thesis, Wesleyan University, 2016. 72 pp. ISBN: 978-1369-66778-3.

(8.) (Amy Feaver, Anna Haensch, **Jingbo Liu**, and Gabriele Nebe)

Kneser-Hecke-operators for codes over finite chain rings.

Directions in number theory, 245-270; *Proceedings of the 2014 WIN3 Workshop "Women in Numbers"*. Association for Women in Mathematics Series. Springer, Switzerland, 2016.

Research Interests

My research is primarily focused on the integral representation problems for quadratic and Hermitian lattices, and their applications. More generally, I am interested in algebraic number theory, logic, and cryptography.

Professional Activities

• International/National Conference Talks

(1.) *Representations of quadratic forms by sums of squares.*

Texas Women in Mathematics Symposium 2020, Texas A&M University, College Station, TX, USA, February 2020.

<http://awm.math.tamu.edu/twims2020.html>

(2.) *Universal sums of m -gonal numbers.*

American Mathematical Society (AMS) - Mathematical Association of America (MAA) Joint Mathematics Meetings, Colorado Convention Center, Denver, CO, USA, January 2020.

http://jointmathematicsm meetings.org/meetings/national/jmm2020/2245_progfull.html

(3.) *On a Waring's problem for quadratic and Hermitian forms.*

Conference on the Arithmetic Theory of Quadratic Forms, Seoul National University, Seoul, South Korea, January 2019.

<http://conference.math.snu.ac.kr/QF2019>

(4.) *Universal sums of m -gonal numbers.*

The 32th Automorphic Forms Workshop, Tufts University, Medford, MA, USA, March 2018.

<http://automorphicformsworkshop.org/pastworkshops/2018/participants.html>

(5.) *On a Waring's problem for quadratic and Hermitian forms.*

American Mathematical Society (AMS) - Mathematical Association of America (MAA) Joint Mathematics Meetings, San Diego Convention Center, San Diego, CA, USA, January 2018.

http://jointmathematicsmeetings.org/meetings/national/jmm2018/2197_progfull.html

(6.) *On a Waring's problem for quadratic and Hermitian forms.*

NTDU5 - Number Theory Down Under, La Trobe University, Melbourne, Victoria, Australia, September - October 2017.

<https://ntdu.mathsig.org/ntdu5/>

(7.) *Universal sums of m -gonal numbers.*

Aspects of Automorphic Forms and Applications, University of Hong Kong, Pokfulam, Hong Kong, July 2017.

<http://www.math.hku.hk/AAFA/>

(8.) *Kneser-Hecke-operators for codes over finite chain rings.*

Association for Women in Mathematics (AWM), Research Symposium 2017, Special Session: WIN - Work from Women in Numbers, University of California at Los Angeles, Los Angeles, CA, USA, April 2017.

<https://sites.google.com/site/awmmath/home/RS17>

(9.) *Strictly regular ternary Hermitian forms.*

Southern New England Conference on Quadratic Forms and Modular Forms, Wesleyan University, Middletown, CT, USA, June 2016.

<http://snumbertheory.conference.wesleyan.edu/>

(10.) *Strictly regular ternary Hermitian forms.*

Langenhop Lecture & SIU Math Conference, Southern Illinois University, Carbondale, IL, USA, May 2016.

<http://math.siu.edu/llmc2016/>

(11.) *Representations of integral Hermitian forms by sums of norms.*

30th Automorphic Forms Workshop, Wake Forest University, Winston-Salem, NC, USA, March 2016.

<http://automorphicformsworkshop.org/pastworkshops/2016/schedule.html>

(12.) *Representations of integral Hermitian forms by sums of norms.*

American Mathematical Society (AMS) - Mathematical Association of America (MAA) Joint Mathematics Meetings, AMS Special Session on Number Theory and Cryptography, Washington State Convention Center, Seattle, WA, USA, January 2016.

http://jointmathematicsmeetings.org/meetings/national/jmm2016/2181_progfull.html

(13.) *Representations of integral Hermitian forms by sums of norms.*

Midwest Number Theory Conference, University of Illinois at Chicago, Chicago, IL, USA, October 2015.

<https://sites.google.com/a/uic.edu/2015mwntc/home>

• Appointed MathSciNet Reviewer by American Mathematical Society (AMS)

- (1.) [MR3973249] Tomoyoshi Ibukiyama.
Quinary lattices and binary quaternion hermitian lattices.
Tohoku Mathematical Journal (2), 71 (2019), 207-220.
- (2.) [MR4015964] Uha Isnaini, Ray S. Melham, and Pee Choon Toh.
On the number of representations of integers by the quadratic forms of eight variables.
Bulletin of the Korean Mathematical Society, 56 (2019), 1143-1157.
- (3.) [MR3947586] Ketevan Shavgulidze.
The number of representations of a positive integer by triangular, square and decagonal numbers.
Rep. Enlarged Sess. Semin. I. Vekua Appl. Math., 32 (2018), 59-62.
- (4.) [MR4076167] Jangwon Ju.
Universal sums of generalized pentagonal numbers.
Ramanujan Journal, 51 (2020), 479-494.

• Referee Work

- International Mathematics Research Notices.

• Conferences/Workshops Attended

- Illinois Number Theory Conference.
University of Illinois at Urbana-Champaign, Urbana, IL, USA, August 2015.
- UNCG Summer School in Computational Number Theory.
University of North Carolina at Greensboro, Greensboro, NC, USA, May 2015.
- Upstate New York Number Theory Conference.
Cornell University, Ithaca, NY, USA, April 2015.
- WIN3: Women in Numbers 3.
Banff International Research Station, Banff, Alberta, Canada, April 2014.
- Arizona Winter School: Arithmetic Statistics.
University of Arizona, Tucson, AZ, USA, March 2014.
- Upstate New York Number Theory Conference.
University of Buffalo, Buffalo, NY, USA, April 2014.
- MSRI Summer Graduate School: New Geometric Techniques in Number Theory.
University of California at Berkeley, Berkeley, CA, USA, July 2013.
- Upstate New York Number Theory Conference.
University of Rochester, Rochester, NY, USA, April 2012.

Teaching Philosophy

To teach mathematics effectively and successfully, it is important to be dedicated and patient, communicate the objectives and materials clearly, encourage curiosity, and emphasize true understanding of the principles.

Teaching Experience

• Texas A&M University, San Antonio, TX, USA

2019~2020

1. MATH 1314: College Algebra. Section 002 (24 students).
2. MATH 1314: College Algebra. Section 003 (24 students).
3. MATH 3340: Linear Algebra with Applications. Section 001 (17 students).
4. MATH 4350: Probability. Section 001 (14 students).
5. MATH 4380: Undergraduate Research in Mathematics. Section 001 (1 student).
6. MATH 1314: College Algebra. Section 002 (22 students).
7. MATH 2312: Pre-Calculus. Section 001 (21 students).
8. MATH 2312: Pre-Calculus. Section 001 (20 students).
9. MATH 3340: Linear Algebra with Applications. Section 001 (19 students).
10. MATH 1314: College Algebra. Section 002 (18 students)

2018~2019

1. MATH 1314: College Algebra. Section 001 (14 students).
2. MATH 1314: College Algebra. Section 004 (22 students).
3. MATH 2312: Pre-Calculus. Section 001 (24 students).
4. MATH 2312: Pre-Calculus. Section 002 (20 students).
5. MATH 3340: Linear Algebra with Applications. Section 001 (20 students).
6. MATH 1314: College Algebra. Section 003 (23 students).
7. MATH 1314: College Algebra. Section 004 (24 students).
8. MATH 3340: Linear Algebra with Applications. Section 001 (24 students).

• University of Hong Kong, Pokfulam, Hong Kong

1. MATH 7501: Topics in Algebra. (Seminar)

• Wesleyan University, Middletown, CT, USA

1. MATH 118: Introductory Calculus II - Integral Calculus. Section 03 (15 students)
2. MATH 117: Introductory Calculus I - Differential Calculus. Section 03 (13 students)

• Shandong University, Jinan, Shandong, P.R. China

1. Linear Algebra for Computer Science and Engineering.
2. Statistics for Business and Management.

Mentorship Experience

1. Co-Supervisor of Nanoti Saraswati Girish, the University of Hong Kong (Completed).
Master Thesis: *Universal mixed sums of triangular numbers and squares.*
2. Supervisor of Bruce Mcosker, Texas A&M University - San Antonio (In Progress).
Undergraduate Research Project: *Legendre's theorem, Hasse invariant and Jacobi symbol.*

Services

- Judge, Mathematical Association of America (MAA) Undergraduate Student Poster Session (Number Theory), Joint Mathematics Meetings, Colorado Convention Center, Denver, CO, USA, January 2020.
- Judge, Science and Engineering Fair, John Jay High School, San Antonio, TX, December 7, 2019.
- Member, Mathematics Program Textbooks Selection Committee, Texas A&M University - San Antonio, November 2019 - present.
- Faculty consultant, Aggies Cyber Invent, Texas A&M University - San Antonio, October 26, 2019.
- Contributor/Reviewer, American Mathematical Society MathSciNet Mathematical Reviews, August 2019 - present.
- Member, Mathematics Program New Course Development Committee for MATH 1315: College Algebra for Non-STEM Majors, Texas A&M University - San Antonio, October 2018 - present.
- Member, Mathematics Program final exam General Education Curriculum (GEC) problem selection Team for MATH 1314: College Algebra corresponding to Field of Study request, Texas A&M University - San Antonio, October - December 2018.
- Judge, Texas Science and Engineering Fair, Henry B. Gonzalez Convention Center, San Antonio, TX, March 23, 2018.
- Judge, Mathematical Association of America (MAA) Undergraduate Student Poster Session (Algebra and Number Theory), Joint Mathematics Meetings, San Diego Convention Center, San Diego, CA, USA, January 2018.
- Judge, Association for Women in Mathematics (AWM) Graduate Student Project Sessions (Algebraic Number Theory and Cryptography), University of California at Los Angeles, Los Angeles, CA, USA, April 2017.
- Judge, Mathematical Association of America (MAA) Undergraduate Student Poster Session (Algebra and Number Theory), Joint Mathematics Meetings, Washington State Convention Center, Seattle, WA, USA, January 2016.

Awards/Travel Grants

- Texas A&M University-San Antonio, College of Arts and Sciences 2020 Summer Research Fellowship, 2020.
- Texas A&M University-San Antonio, College of Arts and Sciences 2019 Summer Research Fellowship, 2019.
- Association for Women in Mathematics (AWM) travel grant for Research Symposium 2017 held at University of California at Los Angeles, Los Angeles, CA, USA, April 8-9, 2017.
- Association for Women in Mathematics (AWM) travel grant for WIN3 Workshop “*Women in Numbers*” held at Banff International Research Station, Banff, Alberta, Canada, April 21-25, 2014.
- National Science Foundation (NSF) and National Security Agency (NSA) fellowship for MSRI Summer Graduate School held at University of California at Berkeley, Berkeley, CA, USA, July 1-12, 2013.

Memberships

- American Mathematical Society
- Association for Women in Mathematics
- Mathematical Association of America