Department of Mathematics
University of Georgia
222 D. W. Brooks Dr.
Athens, Georgia, 30602, United States

Mobile Phone: +86-137-6682-2808
Email: ziqing@uga.edu
Homepage: http://ziqing.org

Education

Sep. 2010 - Jun. 2014	B.Sc. in Computer Science, Shanghai Jiao Tong University. Advisor: Yaokun Wu, Secondary Advisor: Eiichi Bannai
Aug. 2014 - May 2019	Ph.D. in Mathematics, University of Georgia. Advisor: Daniel K. Nakano, Secondary Advisor: Chun-Ju Lai

Research Interests

Representation Theory	Algebraic Groups, Cohomology, Iwahori-Hecke Algebras, q-Schur Algebras, Quantum Groups.
Combinatorics	Association Schemes, Design Theory, Graph Theory, Symbolic Dynamics, Pylogenetic Combinatorics.
Number Theory	Diophantine equations, finiteness of integral points, variable separated curves.

Awards and Fellowships

- William Armor Wills Memorial Scholarship, University of Georgia, Apr. 2018.

- RTG fellowship, University of Georgia, Oct. 2014 - Jul. 2016.

- Chun-Tsung Program, Shanghai Jiao Tong University, Sep. 2013 - Jun. 2014.

Publications

[1] *Rational designs* (with Zhen Cui and Jiacheng Xia),
Advances in Mathematics, 352, 541-571, 2019.

[2] *Support varieties for Hecke algebras* (with Daniel Nakano),
Homology, Homotopy and Applications, 21(2), 59-82, 2019.

[3] *Nonexistence of nontrivial tight 8-designs*,
Journal of Algebraic Combinatorics, 47(2), 301-318, 2018.

[4] *Hamiltonian decomposition of prisms over cubic graphs* (with Moshe Rosenfeld),
Discrete Mathematics & Theoretical Computer Science, 16(2):111-124, 2014.

[5] *A Fisher type inequality for weighted regular t-wise balanced designs*,
Journal of Combinatorial Theory A, 119(7):1523-1527, 2012.

Papers Submitted

The preprints are available on my personal homepage.

[6] *On q-Schur algebras corresponding to Hecke algebras of type B* (with Chun-Ju Lai and Daniel Nakano),
Feb. 2019.

[7] *Classification problem of certain spherical embeddings of strongly regular graphs* (with Eiichi Bannai,
Etsuko Bannai, Wei-Hsuan Yu and Yan Zhu), Aug. 2018.

[8] *Explicit spherical designs*, Jul. 2018.

Preprints

[9] *Integral points on variable separated curves* (with Dino Lorenzini), Sep. 2018.

Papers in Preparation

Some abstracts are available on my personal homepage.

[10] *Hamiltonian thickness and spanning topological minors* (with Yaokun Wu and Yinfeng Zhu).

[11] *New lower bound on the sizes of designs.*

[12] *Lit-only σ-game* (with Yaokun Wu).

[13] *Inferring phylogenies from incomplete metric information* (with Yaokun Wu, Zeying Xu and Yinfeng Zhu).

[14] *Positive matrices, primitive matrices, scrambling matrices, contractible matrices* (with Xinmao Wang and Yaokun Wu).

[15] *Product of P-polynomial association schemes.*

[16] *On s-distance sets in real hyperbolic space.*

Conference Talks

The slides are available on my personal homepage.

May 13, 2019   *Isomorphism theorem between q-Schur algebras of classical type*,
Southeastern Lie Theory Workshop XI,
Louisiana State University.

Mar. 15, 2019   *Isomorphism theorem between q-Schur algebras of type B and type A*,
Spring Southeastern Sectional Meeting,
Auburn University.

Oct. 19, 2018   *Diophantine equations related to tight designs*,
Design Theory from the Viewpoint of Algebraic Combinatorics,
Three Gorges Mathematical Research Center.

Oct. 19, 2018   *New lower bound on the sizes of designs*,
Design Theory from the Viewpoint of Algebraic Combinatorics,
Three Gorges Mathematical Research Center.

Oct. 16, 2018   *Existence of rational designs*,
Design Theory from the Viewpoint of Algebraic Combinatorics,
Three Gorges Mathematical Research Center.

Oct. 16, 2018   *Explicit constructions of designs*,
Design Theory from the Viewpoint of Algebraic Combinatorics,
Three Gorges Mathematical Research Center.

Jun. 11, 2018   *Support varieties for Hecke algebras*,
Southeastern Lie Theory Workshop X, University of Georgia.

Nov. 25, 2017   *An explicit construction of spherical designs*,
International Workshop on Bannai-Ito Theory, Zhejiang University.

Apr. 25, 2015	*The lit-only σ-game*, 2015 Workshop on Combinatorics and Applications at SJTU, Shanghai Jiao Tong University.
Apr. 24, 2015	*Spherical designs over a number field*, 2015 Workshop on Combinatorics and Applications at SJTU, Shanghai Jiao Tong University.
Oct 27, 2014	*Tight block designs*, Sphere Packings, Lattices, and Designs, Erwin Schrödinger International Institute.
Nov. 19, 2013	*Product of P-polynomial association schemes*, Workshop on Algebraic Combinatorics, Hebei Normal University.
Jun. 24, 2013	*Lit-only σ-game*, The 2nd Pacific Rim Mathematical Association Congress, Shanghai Jiao Tong University.
Nov. 21, 2012	*Some s-distance set in hyperbolic space*, Mini-Workshop on Spherical Designs and Related Topics, Shanghai Jiao Tong University.
Nov. 11, 2012	*Incidence matrix and cover matrix*, The 2nd Japan-Taiwan Conference on Combinatorics and its Applications, Nagoya University.
Aug. 18, 2012	*Nonexistence of nontrivial tight 8-design*, 2012 Shanghai Conference on Algebraic Combinatorics, Shanghai Jiao Tong University.
Sep. 16, 2011	*Fisher type inequality*, Workshop on Algebraic Combinatorics, Shanghai Jiao Tong University.

Other Talks

Apr. 1, 2019	*On q-Schur algebras of classical type*, Algebra Seminar, University at Buffalo.
Mar. 18, 2019	*Representation theory for Iwahori-Hecke algebras and Schur algebras of classical type*, Algebra Seminar, University of Georgia.
Jul. 27, 2018	*Good subsets of the unit circle*, Graduate Student Summer Conference, University of Georgia.
Feb. 5, 2018	*Support varieties for Hecke algebras*, Algebra Seminar, University of Georgia.
Nov. 6, 2017	*An introduction to Soergel bimodules*, Algebra Seminar, University of Georgia.
Jul. 26, 2017	*Dimensions of Specht modules*, Graduate Student Summer Conference, University of Georgia.
May 29, 2017	*An explicit construction of spherical designs*, Combinatorics Seminar, Shanghai Jiao Tong University.
Jul. 28, 2016	*Support varieties of Iwahori-Hecke algebras of type A*, Graduate Student Summer Conference, University of Georgia.
Apr. 13, 2016	*Sphere packings, spherical codes and spherical designs*, Number Theory Seminar, University of Georgia.

Jan. 28, 2015	*Nonexistence of tight 8-design,* Number Theory Seminar, University of Georgia.
Jul. 9, 2014	*Structure of strongly connected digraphs,* Combinatorics Seminar, Shanghai Jiao Tong University.
Apr. 12, 2014	*Laplacians,* Combinatorics Seminar, Shanghai Jiao Tong University.
Jun. 13, 2013	*Relative designs, totally positive sequence and zero distribution,* Combinatorics Seminar, Shanghai Jiao Tong University.
Nov. 21, 2012	*Some s-distance sets in hyperbolic space,* Combinatorics Seminar, Shanghai Jiao Tong University.
Jun. 6, 2012	*On the nonexistence of nontrivial tight 8-design,* Combinatorics Seminar, Shanghai Jiao Tong University.
Apr. 22, 2012	*Rational spherical t-semidesign,* Combinatorics Seminar, Shanghai Jiao Tong University.
Mar. 4, 2012	*A glimpse at P-polynomial association schemes,* Combinatorics Seminar, Shanghai Jiao Tong University.

Teaching

Spring 2018	Precalculus - MATH 1113 - Sections 20571, University of Georgia.
Fall 2017	Precalculus - MATH 1113 - Sections 15369 and 29605, University of Georgia.
Spring 2017	Calculus I - MATH 2250 - Section 40630, University of Georgia.
Fall 2016	Precalculus - MATH 1113 - Section 15218, University of Georgia.
Summer 2012	Computational Number Theory, Shanghai Jiao Tong University.
Spring 2011	Real Analysis, Shanghai Jiao Tong University.
Fall 2010	Calculus, Shanghai Jiao Tong University.

Service - Referee

- Applicable Analysis and Discrete Mathematics
- Advances in Mathematics

Conference Organization

Oct. 2018	Design Theory from the Viewpoint of Algebraic Combinatorics, Three Gorges Mathematical Research Center. *Chair, in charge of schedule and website.*
Jun. 2018	Southeast Lie Theory X, University of Georgia. *Member of the organization committee.*
Apr. 2015	2015 Workshop on Combinatorics and Applications at SJTU, Shanghai Jiao Tong University. *Chair, in charge of schedule and website.*
Apr. 2014	Minisymposium on Combinatorics, Shanghai Jiao Tong University. *Member of the organization committee.*
Nov. 2012	Mini-Workshop on Spherical Designs and Related Topics, Shanghai Jiao Tong University. *Chair, in charge of schedule and website.*
Aug. 2012	2012 Shanghai Conference on Algebraic Combinatorics, Shanghai Jiao Tong University. *Chair, in charge of badges, program book, schedule and website.*

Technical Skills

Programming languages	C, C++, Haskell, Lisp, Java, Python.
Other languages	CSS, HTML, Javascript, PHP, VHDL.
Mathematics tools	Mathematica, MATLAB, Sage.