Curriculum Vitae

Zeying Wang

Contact

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Education

Ph.D. Mathematics — December 2008
University of Delaware, Newark, DE
Dissertation: Skew Hadamard difference sets, strongly regular graphs and p-ary bent functions
Thesis Advisor: Qing Xiang

M.S. Mathematics — February 2002
Shanghai Jiao Tong University, Shanghai, P.R. CHINA

B.S. Mathematics Education — July 1999
Southwest University, Chongqing, P.R. CHINA

Positions

Assistant Professor — August 2016—Now
Michigan Technological University, Houghton, MI

Lecturer — August 2012—August 2016
Michigan Technological University, Houghton, MI

Visiting Assistant Professor — September 2010—May 2012
Otterbein University, Westerville, OH

Visiting Assistant Professor — October 2008—June 2010
Ohio University, Athens, OH

Publications

1. **Z. Wang**, *New necessary conditions on Paley type partial difference sets in abelian groups*, published online in *Journal of Combinatorial Designs*, February 2019.

   https://doi.org/10.1002/jcd.21655

2. S. De Winter, **Z. Wang**, Non-existence of partial difference sets in Abelian groups of order $8p^3$, published online in *Designs, Codes and Cryptography*, July 2018.

   https://doi.org/10.1007/s10623-018-0508-z

3. S. De Winter, Eric Neubert, and **Z. Wang**, Non-existence of two types of partial difference sets, *Discrete Mathematics*, vol. 340, no. 9, pp. 2130-2133, 2017.

4. S. De Winter, **Z. Wang**, Classification of partial difference sets in Abelian groups of order $4p^2$, *Designs, Codes and Cryptography*, vol. 84, no. 3, pp. 451-461, 2017.

5. S. De Winter, E. Kamischke and **Z. Wang**, Automorphisms of strongly regular graphs with applications to partial difference sets, *Designs, Codes, and Cryptography*, vol. 79, pp. 471–485, 2016.

6. T. Helleseth, H. Hollmann, A. Kholosha, **Z. Wang**, and Q. Xiang, Proofs of two conjectures on ternary weakly regular bent functions, *IEEE Trans. Inform. Theory*, vol. 55, no. 11, pp. 5272–5283, 2009.

7. G.B. Weng, W.S. Qiu, **Z. Wang**, and Q. Xiang, Pseudo-Paley graphs and skew Hadamard difference sets from presemifields, *Designs, Codes and Cryptography*, vol. 44, pp. 49–62, 2007.

8. C.S. Ding, **Z. Wang**, and Q. Xiang, Skew Hadamard difference sets from the Ree-Tits slice symplectic spreads in $\mathrm{PG}(3, 3^{2h+1})$, *Journal of Combinatorial Theory, Series A*, vol. 114, pp. 867–887, 2007.

Manuscripts in Preparation

- **Z. Wang**, *A spectrum result for (negative) Latin square type PDSs in Abelian groups*, preprint.

- S. De Winter, **Z. Wang**, *Local multiplier results for Paley type PDS and skew Hadamard difference sets in Abelian groups*, preprint.
- E. Neubert, **Z. Wang**, *On rigid-type partial geometries with an abelian Singer group*, in preparation.
- S. De Winter, M.S. Keranen, D.L. Kreher, J. Nakamura, and **Z. Wang**, *On a representation of integers,* preprint.

Funded Grant

- *New Perspectives on partial difference sets and related objects*, NSF-AWM travel grant, 2017.
  Amount: $2215.

Proposal Submitted

- New perspectives on (partial) difference sets and related objects.

  PI: **Z. Wang**, submitted to *Simons Foundation–Collaboration Grants for Mathematicians* in Jan. 2019.
- New perspectives on difference sets and related objects.

  PI: Stefaan De Winter, Co-PI: **Z. Wang**, submitted to *NSF* in Oct. 2016.

Talks at Conferences and Seminars

1. Rigid type partial geometries with an abelian Singer group, *Seminar talk*, University of Delaware, Newark, DE, February 2019. (invited & externally funded)
2. Paley type and negative Latin square type partial difference sets in Abelian groups, *Seminar talk*, Michigan Technological University, MI, September 2018.
3. Paley type and negative Latin square type partial difference sets in Abelian groups, *Seminar talk*, University of Delaware, Newark, DE, August 2018. (invited & partially externally funded)
4. Partial difference sets in Abelian groups, *International Workshop on Difference Sets*, Zhejiang University, Hangzhou, China, May 2018. (invited)

5. Partial difference sets in Abelian groups of order $8p^3$, *AMS Spring Central Sectional Meeting*, Ohio State University, OH, March 2018. (invited)

6. Partial difference sets in Abelian groups, *Combinatorics Seminar*, Michigan Technological University, MI, January 2018.

7. Partial difference sets in Abelian groups, *the 5th Irsee Conference on Finite Geometries*, Irsee, Germany, September 2017. (invited)

8. Partial difference sets in Abelian groups, *Seminar Talk*, Southwest Jiao Tong University, Chengdu, China, June 2017. (invited)

9. Non-existence of non-trivial regular partial difference sets in Abelian groups of order $8p^3$, *Ninth Shanghai Conference on Combinatorics*, Shanghai Jiao Tong University, Shanghai, China, May 2017. (invited)

10. Automorphisms of strongly regular graphs with applications to partial difference sets, *Seminar talk*, University of Delaware, Newark, DE, Feburary 2017. (invited & partially externally funded)

11. Classification of PDS in Abelian groups of order $4p^2$, *Fall Western Sectional Meeting*, University of Denver, CO, October 2016. (invited)

12. Automorphisms of strongly regular graphs and partial difference sets, *Colloquium Talk*, Otterbein University, OH, November 2015. (invited & externally funded)

13. Automorphisms of strongly regular graphs and PDS in Abelian groups, *The first annual Kliakhandler Conference: Algebraic Combinatorics and Applications*, Michigan Technological University, MI, August 2015.

14. Graphs without Quadrilaterals: A Problem by Paul Erdös, *Department Seminar*, Otterbein University, OH, May 2011.

15. Skew Hadamard difference sets and pseudo-Paley graphs, *Colloquium Talk*, Otterbein University, OH, April 2010. (invited & externally funded)

16. Skew Hadamard difference sets and pseudo-Paley graphs, *Applied and Computational Mathematics Seminar*, Ohio University, OH, January 2009.

17. Trace functions, Gauss sums and p-ary bent functions, *Three Seminar Talks*, Ohio University, OH, October 2008.

18. Skew Hadamard difference sets, strongly regular graphs and p-ary bent functions, *Ph.D. Dissertation Defense*, University of Delaware, DE, May 2008.

19. Skew Hadamard difference sets, *Colloquium Talk*, Kenyon College, OH, March 2008. (invited & externally funded)

20. Skew Hadamard difference sets from the Ree-Tits slice symplectic spreads, *AMS Session on Combinatorics, III*, San Diego, CA, January 2008.

21. Pseudo-Paley graphs and skew Hadamard difference sets from presemifields, *Discrete Mathematics Seminar*, University of Delaware, DE, April 2007.

22. Skew Hadamard difference sets from symplectic spreads, *Discrete Mathematics Seminar*, University of Delaware, DE, March 2006.

Conferences Attended

- Attended the international conference *Algebraic & Extremal Graph Theory Conference* in University of Delaware, Newark, DE, August 7-10, 2017.
- Attended the international conference *the Second Malta Conference in Graph Theory and Combinatorics* in Malta, June 26-30, 2017.
- Attended the international workshop *New directions in Combinatorics* in Singapore, May 21st–28th, 2016.

Advising Undergraduate and Graduate Student(s)

- I supervised Eric Neubert on research projects in Summer 2016 and Summer 2017 when he was an undergraduate student at Michigan Tech. Since Sept. 2017 I am his master degree advisor.

  In 2017, we published a co-authored paper in *Discrete Mathematics* together with Dr. Stefaan De Winter. Currently we are writing up a joint paper on rigid-type partial geometries with an abelian Singer group which will be submitted in 2019.

- I supervised undergraduate student Jared Nakamura on his research project titled "On partitions of integers" during the academic year 2013-2014 at Michigan Tech. I also helped Jared to prepare to give a talk in the MAA meeting at Michigan Tech in October 2013.

  Based on the results from the project, we wrote a joint paper titled "On a representation of integers" together with several faculty from Michigan Tech.

Departmental and Academic Service

- Serve in the departmental hiring committee,
  Michigan Tech, Oct. 2017—now.
- Serve in the departmental undergraduate committee,
  Michigan Tech, Sept. 2014–Sept. 2017.
- Wrote and graded graduate student qualifying exams in Fall 2016.
- Meet with 4-5 students from the actuarial science major regularly on Sundays during Spring 2016 to prepare them to take Exam FM.
  Michigan Tech, Spring 2016.
- Serve as a reviewer for Mathematical Reviews since Sept. 2016.

Actuarial Science

- Passed Exam P, FM, and MFE from the Society of Actuaries.

Teaching Experience

Instructor

Michigan Technological University, Houghton, MI

- MA 1160/MA 1161 Calculus with Technology I
- MA 2160, Calculus with Technology II
- MA 2320, Introduction to Linear Algebra (regular and online course)
- MA 3160, Multivariable Calculus with Technology
- MA 3210, Introduction to Combinatorics
- MA 3810, Introduction to Actuarial Mathematics (Actuarial Science)
- MA4209, Graph Theory and Combinatorics

Otterbein University, Westerville, OH

- ASC 0900, Prerequisite to College Mathematics
- Math 1240, Statistics I
- Math 1250, Elementary Functions (Pre-Calculus)
- Math 1700, Math 1800, Calculus I, II
- Math 2500, Linear Algebra
- Math 3300, Probability (Actuarial Science)
- Math 3370, Applied Statistics–Writing Intensive (Actuarial Science)

Ohio University, Athens, OH

- Math 163A, Introduction to Calculus I
- Math 211, Introduction to Linear Algebra
- Math 263A, Math 263B, Calculus I, II
- Math 307, Introduction to Number Theory
- Math 412/512, Introduction to Algebraic Coding Theory (for both undergraduate and graduate students)

University of Delaware, Newark, DE

- Math 241, 242, 243: Analytic Geometry & Calculus A, B, C

Computer Skills

- Proficient in programming with Magma, Maple and Matlab and writing in Latex.
- Experienced in using statistical software SPSS and Minitab.