

CURRICULUM VITA

Yilong Wang

Assistant Research Fellow

Yanqi Lake Beijing Institute of Mathematical Sciences and Applications (BIMSA)

Huairou District, Beijing, China

E-mail: wyl@bimsa.cn

Personal website: yilongwang11.github.io

Education

- 2011 - 2018 Ph.D., Mathematics, The Ohio State University.
Advisor: Thomas Kerler.
- 2011 - 2018 M.S., Mathematics, The Ohio State University.
- 2007-2011 B.S. (Hons.), Mathematics, Zhejiang University.

Employments

- 2021-present Assistant Research Fellow, BIMSA.
- 2018-2021 Postdoc Researcher, Louisiana State University.
Mentor: Siu-Hung Ng.
- 2011-2018 Graduate Teaching Assistant, The Ohio State University.

Publications and preprints

1. On symmetric representations of $SL_2(\mathbb{Z})$ (with Siu-Hung Ng and Samuel Wilson).
Preprint. arXiv:2203.15701.
2. The Witt classes of $\mathfrak{so}(2r)_{2r}$ (with Eric C. Rowell and Yuze Ruan).
Comm. Algebra. 2022. doi:10.1080/00927872.2022.2083630.
3. Modular categories with transitive Galois actions (with Siu-Hung Ng and Qing Zhang).
Comm. Math. Phys. **390** (2022), no. 3, 1271-1310.

4. Higher central charges and Witt groups (with Siu-Hung Ng, Eric C. Rowell and Qing Zhang). *Adv. Math.* **404** (2022), Paper No. 108388.
5. Classification of spherical fusion categories of Frobenius-Schur exponent 2 (with Zheyuan Wan). *Algebra Colloq.* **28** (2021), no. 1, 39-50.
6. Higher Gauss sums of modular categories (with Siu-Hung Ng and Andrew Schopieray). *Selecta Math. (N.S.)* **25** (2019), no. 4, Paper No. 53, 32 pp.
7. On modular group representations associated to $SO(p)_2$ -TQFTs. *J. Knot Theory Ramifications* **28** (2019), no. 5, 1950037, 20 pp.
8. Random walk invariants from R-matrices (with Thomas Kerler). *Algebr. Geom. Topol.* **16** (2016), no. 1, 569-596.
9. On integrality of $SO(n)$ -Level-2 TQFTs. Thesis. The Ohio State University, 2018.

Talks

1. *Modular tensor categories from $SL_2(\mathbb{Z})$ representations*, Shanghai Jiao-Tong University, April 2022.
2. *Modular categories and their classifications*, Summer Frontier Research Lectures, Qingdao University, July 2022.
3. *Classification of transitive modular categories*, University Quantum Symmetries Lectures (UQSL), April 2021 (online).
4. *Modular categories with transitive Galois group actions*, FRG Seminar, September 2020 (online).
5. *Witt group invariants of modular categories*, Operator Algebra Seminar, University of California, Riverside, May 2020 (online).
6. *Algebraic properties of modular tensor categories*, Colloquium, Wayne State University, February 2020.
7. *Integrality of modular tensor categories*, Algebra seminar, University of Louisiana at Lafayette, November 2019.
8. *Classification of spherical fusion categories of Frobenius-Schur exponent 2*, Southern Regional Algebra conference, University of Louisiana at Lafayette, April 2019.
9. *On higher Gauss sums of modular categories*, Southern Regional Number Theory Conference, Louisiana State University, April 2019.
10. *Classification of spherical fusion categories of Frobenius-Schur exponent 2*, Quantum Algebra and Quantum Topology seminar, The Ohio State University, February 2019.

11. *Modular categories and RT-TQFTs*, Virtual Topology Seminar, Louisiana State University, September 2018.
12. *Higher Gauss sum and higher central charges of premodular fusion categories*, AMS Sectional Meeting Special Session on Quantum Symmetries, The Ohio State University, March 2018.
13. *Integrality for $SO(p)_2$ -TQFTs for once-punctured torus*, Virtual Topology seminar, Louisiana State University, October 2017.
14. *Two constructions of the Jones polynomial*, Quantum Algebra and Quantum Topology seminar, The Ohio State University, September 2017.
15. *Integrality for $SO(p)_2$ -TQFTs in genus 1*, AMS Sectional Meeting Special Session on Fusion Categories and Applications, Indiana University, Bloomington, April 2017.
16. *Metaplectic modular categories and the associated TQFT*, Quantum Algebra and Quantum Topology seminar, The Ohio State University, November 2016.
17. *Mapping class group representation from metaplectic modular categories and integrality*, Advances in Quantum and Low-dimensional topology, University of Iowa, March 2016.
18. *Random walk invariants of string links from R-matrices*, Knot Theory and Quantum Computation, UT Dallas, January 2015.
19. *Random walk invariants of string links via representation theory*, Knots in Washington, George Washington University, May 2014.
20. *Approximation of colored Jones polynomials*, Low-Dimensional/Quantum Topology seminar, The Ohio State University, November 2013.
21. *Temperley-Lieb algebra, Jones-Wenzl idempotents, and the colored Jones Polynomial*, Low-Dimensional/Quantum Topology seminar, The Ohio State University, September 2012.

Conferences organized

- *AMS Special Session on Quantum Symmetries: Subfactors and Fusion Categories (a Mathematics Research Communities Special Session)*. Joint Mathematics Meeting, January 2019, Baltimore, Maryland.

Teaching experience

Louisiana State University

- Spring 2021 Math 2020 Solving Discrete Problems
- Fall 2020 Math 2070 Mathematical Methods in Engineering
- Fall 2019 Math 7290 Modular tensor categories and quantum invariants
- Fall 2019 Math 1550 Calculus I

- Fall 2018 Math 1550 Calculus I

The Ohio State University

- 2015-2017 Math 1152 Calculus II
- 2013-2015 Math 1172 Engineering Mathematics A
- 2012-2013 Math 1151 Calculus I

Awards

Special Graduate Assignments, The Ohio State University, 2015, 2016, 2017.

Other Activities

1. *Tensor categories and topological quantum field theories.* Mathematical Science Research Institute (MSRI) Workshop. Berkeley, California (Moved online), March 2020.
2. *Introductory workshop: Quantum symmetries.* Mathematical Science Research Institute (MSRI) Workshop. Berkeley, California, January 2020.
3. *Quantum symmetries: Summer research program.* The Ohio State University, June 2019.
4. *Quantum symmetries: subfactors and fusion categories.* Mathematical Research Community (MRC) Program. University of Rhode Island, June 2018.
5. *Subfactors: planar algebras, quantum symmetries, and random matrices.* Mathematical Science Research Institute (MSRI) Summer School. Berkeley, California, June 2017.