

Zhao Zhang

CONTACT INFORMATION	Rm 603, SISSA, via Bonomea 265, I-34136, Trieste, Italy	+39 3452275661 zhzhang@sissa.it
RESEARCH INTERESTS	Entanglement entropy, integrability and its breakdown, topological order, quantum circuit, tensor and neural network, quantum and statistical field theory	
EDUCATION	University of Virginia , Charlottesville, Virginia, USA Doctor of Philosophy, Physics, May 2017 <ul style="list-style-type: none">• Thesis Topic: <i>Novel Quantum Phases in Low Dimensions</i>• Advisors: Israel Klich and Jeffrey Teo University of Science and Technology of China , Hefei, Anhui, China Bachelor of Science, Physics, July 2012 <ul style="list-style-type: none">• Thesis Topic: <i>Phenomenological Study of the Bottom Pair Associated SUSY Higgs Production</i>	
ACADEMIC POSITIONS HELD	Postdoctoral Fellow SISSA	December 2021 to Present Trieste, IT
	Joint Postdoctoral Fellow NORDITA and Tsung-Dao Lee Institute	March 2019 to December 2021 Stockholm and Shanghai
SUBMITTED JOURNAL PUBLICATIONS	<ol style="list-style-type: none">1. ZZ, “Entanglement blossom in a simplex matryoshka.” submitted to <i>Annals of Physics</i>, 2023.2. ZZ, and I. Klich, “Coupled Fredkin and Motzkin Chains from six- and nineteen-vertex models.” submitted to <i>SciPost Physics</i>, 2022.3. ZZ, and I. Klich, “Quantum colored lozenge tiling and entanglement phase transition” submitted to <i>Physical Review Letters</i>, 2022.4. ZZ, and H. S. Røising, “The frustration-free fully packed loop model.” submitted to special issue of <i>Journal of Physics A: Mathematical and Theoretical</i>, 2022.	
REFEREED JOURNAL PUBLICATIONS	<ol style="list-style-type: none">1. ZZ, and G. Mussardo, “Hidden Bethe states in a partially integrable model.” <i>Physical Review B</i> 106, 134420, 2022.2. H. Zou, Y. Cui, X. Wang, ZZ, et al. “Exceptional E_8 Spectra of Quasi-one-dimensional Antiferromagnet $BaCo_2V_2O_8$ under Transverse Field.” <i>Physical Review Letters</i> 127, 077201, 2021.3. G. Mussardo, A. Trobettoni, and ZZ. “Prime Suspects in a Quantum Ladder.” <i>Physical Review Letters</i> 125, 240603, 2020.4. ZZ, et al. “Observation of E_8 particles in an Ising chain antiferromagnet.” <i>Physical Review B</i> 101, 220411, 2020.5. R. Alexander, A. Ahmadain, ZZ, and I. Klich. “Exact rainbow tensor networks for the colorful Motzkin and Fredkin spin chains.” <i>Physical Review B</i> 100, 214430, 2019.	

6. **ZZ**, and I. Klich. “Entropy, gap and a multi-parameter deformation of the Fredkin spin chain.” *Journal of Physics A: Mathematical and Theoretical*, 50, 425201, 2017.
7. O. Salberger, T. Udagawa, **ZZ**, H. Katsura, I. Klich, and V. Korepin, “Deformed Fredkin spin chain with extensive entanglement.” *Journal of Statistical Mechanics: Theory and Experiment*, 2017 (6) 063103, 2017.
8. **ZZ**, A. Ahmadain, and I. Klich, “Novel quantum phase transition from bounded to extensive entanglement.” *Proceedings of the National Academy of Sciences of the United States of America*, 114 (20) 5142-5146, 2017.
9. S. Sahoo, **ZZ**, and J. C. Y. Teo. “Coupled wire model of symmetric Majorana surfaces of topological superconductors.” *Physical Review B*, 94, 165142, 2016.

GRANTS AND AWARDS

- Youth Program of National NSF of China (No. 12005129), CNY 240,000 2021-2023
- Shanghai Post-doctoral Excellence Program, CNY 600,000 2019-2021

PRESENTATIONS

Invited Talks

- *Quantum tiling and holography on a lattice*, University of Virginia, Charlottesville, VA November 2022
- *From coprime spin ladder to partially integrable spin chain*, Number Theory and Physics, Simons Center for Geometry and Physics, Stony Brook, NY October 2022
- *Rigorous results on a frustration-free quantum fully packed loop model*, Ramdomness, Integrability and Universality, GGI, Florence, Italy May 2022
- *Exact excited states in non-integrable multicomponent AFM XXZ chain*, International Workshop on Theoretical Developments and Experimental Progresses in Quantum Matter: Emergent Phenomena , Shanghai, China August 2020
- *A quasi-exactly solvable multicomponent antiferromagnetic XXZ model*, International Youth Forum for Physics, Shanghai, China August 2020
- *Motzkin spin chains and their exact holographic tensor network representations*, Joint ICTP/SISSA Statistical Physics Seminar, Trieste, Italy November 2019
- *From area law to extensive entanglement entropy in a new quantum phase transition*, IST Austria, Klosterneuburg, Austria October 2017

Contributed Talks

- *Coupled wire model of symmetric Majorana surfaces of topological superconductors II: 32-fold periodic topological orders*, Baltimore, MD March 2016

Attended Conferences, Workshops and Summer Schools

- Machine Learning in Physics, GGI, Florence, IT September 2022
- ESQuisses Summer School, Porquerolles July 2022
- Out-of-equilibrium and collective dynamics of quantum many-body systems, Zurich June 2022
- Systems out of equilibrium: Interplay between statistical, quantum and disordered dynamics, Paris, France October 2020
- Fractional Quantum Hall beyond Chern-Simons Theory, Shanghai October 2019
- American Physical Society March Meeting, Baltimore, MD March 2016
- Princeton Summer School on Condensed Matter Physics and Prospects in Theoretical Physics, Princeton, NJ July 2015
- American Physical Society March Meeting, San Antonio, TX March 2015

TEACHING EXPERIENCE

Teaching Assistant and Secondary Instructor at University of Virginia
 General Physics, Laboratory; Electricity and Magnetism,
 Solid State Physics, ... Fall 2012 to Summer 2017

SERVICE

Referee

Europhysics Letters

September 2020

International Journal of Modern Physics B.

July 2018

Journal of Physics A: Mathematical and Theoretical.

February 2017

REFERENCES

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