Zhen Huan

CONTACT INFORMATION

Center for Mathematical Sciences,
Huazhong University of Science and Technology
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RESEARCH INTERESTS

Algebraic topology, algebraic geometry and mathematical physics.

POSITION

Center for Mathematical Sciences, Huazhong University of Science and Technology, Wuhan, China
Associate Professor, June 2019-present

Sun Yat-sen University, Guangzhou, China
Research Associate, August 2017-June 2019

VISITING POSITION

Max Planck Institute for Mathematics, Bonn, Germany

Guest visitor, May 2020-June 2020.

Georg-August-Universitat Gottingen, Gottingen, Germany

Postdoctoral Fellow, February 2020-February 2021.
Supervisor: Chenchang Zhu.

The University of Melbourne, Melbourne, Australia

Academic Visitor, October 2018-November 2018.
Supervisor: Nora Ganter.

Universität Duisburg-Essen, Essen, Germany

Research Assistant, April 2018-July 2018.
Supervisor: Marc N. Levine.

EDUCATION

University of Illinois at Urbana-Champaign

Ph.D. in Mathematics, May 2017 [1]

- Dissertation Defense Date: May 5th 2016
- Dissertation Title: Quasi-Elliptic Cohomology
- Advisor: Charles Rezk

Indiana University Bloomington

M.A. in Mathematics, October 2009 [2]

Peking University

B.A. in Mathematics, May 2006

- Thesis Title: Morse Theory and Bott Periodicity
- Advisor: Houhong Fan

[1] My PhD thesis is 290 pages long. After my defense, I revised the paper for one year to make it more readable and classy under Charles Rezk and Matthew Ando's advice.

[2] During the phase of doctoral research, my research interest switched to algebraic topology and I transferred to UIUC in 2010 whose algebraic topology group was much larger.

Publication

- Zhen Huan, *Quasi-Elliptic Cohomology I.*, Advances in Mathematics. Volume 337, 15 October 2018, Pages 107-138. https://doi.org/10.1016/j.aim.2018.08.007.
- Zhen Huan, *Quasi-Elliptic Cohomology and its Power Operations*, Journal of Homotopy and Related Structures, 13(4), 715-767. http://link.springer.com/article/10.1007/s40062-018-0201-y.
- Zhen Huan, *Quasi-elliptic cohomology*, Thesis (Ph.D.)–University of Illinois at Urbana-Champaign. 2017. 290 pp. http://hdl.handle.net/2142/97268.

Preprint

- Zhen Huan, *Quasi-Elliptic Cohomology and its Spectrum*, available at arXiv:1703.06562. Submitted for publication.
- Zhen Huan, *Universal Finite Subgroup of Tate Curve*, available at arXiv:1708.08637. Submitted for publication.
- Zhen Huan, *Quasi-Theories*, available at arXiv:1809.06651.
- Zhen Huan, *Quasi-Theories and Their Equivariant Orthogonal Spectra*, available at arXiv:1809.07622.
- Zhen Huan, *Almost Global Homotopy Theory*, available at arXiv:1809.08921. Submitted for publication.
- Zhen Huan and Matthew Spong, *Twisted Quasi-elliptic cohomology and twisted equivariant elliptic cohomology.* arXiv:2006.00554¡£ Submitted for publication.
- Zhen Huan and Nathaniel Stapleton, *Level structures on p-divisible groups from the Morava E-theory of abelian groups*, available at arXiv:2001.10075. Submitted for publication.

Work in Progress

- Zhen Huan and Matthew Spong, *Power operation of twisted quasi-elliptic cohomology.* In Preparation.

Invited Talks

- Conference "Elliptic cohomology and Physics", Perimeter Institute for Theoretical Physics, *Quasi-elliptic cohomology theory and the twisted, twisted Real theories*, May 28, 2020.
- University of Copenhagen, *Twisted Quasi-elliptic cohomology*, May 4, 2020, Copenhagen, Denmark.
- AMS Special Session on Geometric Representation Theory and Equivariant Elliptic Cohomology, Joint Mathematics Meetings, *Level Structure and Morava E-theory*, January 16, 2020, Denver, Colorado, USA.
- Young Mathematician Forum at Beijing International Center for Mathematical Research, *Level Structure and Morava E-theory*, December 3-5, 2019.
- Conference "Elliptic cohomology days", University of Illinois at Urbana-Champaign, *Quasi-elliptic cohomology*, June 12, 2019.
- National University of Singapore Topology & Geometry Seminar, *Quasi-elliptic cohomology*, March 20, 2019.
- Center for Mathematical Sciences, Huazhong University of Science and Technology, *Quasi-elliptic cohomology*, December 23, 2018.
- The University of Melbourne mini lecture series, *Almost global homotopy theory*, November 14 and 16, 2018.
- The University of Melbourne mini lecture series, *Quasi-elliptic cohomology*, November 7 and 9, 2018.
- Fudan University Topology Seminar, *Almost global homotopy theory*, October 10, 2018.

- Center for Mathematical Sciences, Huazhong University of Science and Technology seminar, *Almost global homotopy theory*, September 25, 2018.
- Georg-August-Universität Göttingen Seminar, *Quasi-elliptic cohomology*, June 6, 2018.
- The University of Duisburg-Essen Research Seminar Arithmetic Geometry, *Quasi-elliptic cohomology*, May 17, 2018.
- Chinese Academy of Sciences Topology Seminar, *Quasi-elliptic cohomology*, March 29, 2018.
- Sun Yat-sen University, Zhuhai Campus, *Quasi-elliptic cohomology*, January 12, 2018.
- Peking University Geometry and Topology Seminar, *Quasi-elliptic cohomology*, November 30, 2017.
- South China Normal University Topology Seminar, *Quasi-elliptic cohomology*, November 16, 2017.
- Southern University of Science and Techonology Topology Seminar, *Quasi-elliptic cohomology*, November 14, 2017.
- Poster Session, Schubert Calculus International Festival, *Quasi-elliptic cohomology*, November 9, 2017.
- AMS Special Session on Homotopy Theory, *Quasi-elliptic cohomology*, November 5, 2017.
- Nankai University Algebraic Topology Seminar, *Quasi-elliptic cohomology*, October 10, 2017.
- Parallel Session, Conference "Homotopy theory: tools and applications", *Quasi-elliptic cohomology*, July 17, 2017.
- Informal Session, Conference on invertible objects and duality in derived algebraic geometry and homotopy theory, the University of Regensburg, Germany, *Quasi-elliptic cohomology*, April 3, 2017.
- AMS Special Session on Homotopy Theory, *Quasi-elliptic cohomology*, April 1, 2017.
- AMS Special Session on Topology and Arithmetic, *Quasi-elliptic cohomology*, October 30, 2016.
- University of Chicago Algebraic Topology Seminar, *Quasi-elliptic cohomology*, November 25 2014.
- Northwestern University Algebraic Topology Seminar, *Quasi-elliptic cohomology*, November 24 2014.

Teaching Experience

Huazhong University of Science and Technology

Main instructor of

- Introduction to Algebraic Topology, Fall 2019.

University of Illinois at Urbana-Champaign

Main instructor of

- NetMath MATH 231-Calculus II, Summer 2016.
- MATH 124-Finite Mathematics, Spring 2016.
- MATH 124-Finite Mathematics, Fall 2015.
- MATH 124-Finite Mathematics, Spring 2015.
- MATH 119-Ideas in Geometry, Fall 2013.

Led discussion sessions for

- MATH 221-Calculus I, Fall 2016.
- MATH 231-Calculus II, Fall 2012.
- MATH 234-Calculus for Business I, Spring 2012.
- MATH 231-Calculus II, Fall 2011.

Fellowship and Awards

- James P. Williams Memorial Award in recognition of outstanding scholastic achievement in the first year of graduate studies, from Department of Mathematics, Indiana University, Bloomington, 2007.
- Project supported by the Young Scientists Fund of the National Natural Science Foundation of China (Grant No. 11901591). *Quasi-elliptic cohomology and its application in geometry and topology.* Funding: 289,000 yuan. 2020/01/01-2022/12/31.

Service

- Referee for Tbilisi Mathematical Journal.
- Co-organizer of the conference "International Workshop on Algebraic Topology" at Southern University of Science and Technology, June 6-9, 2018.
- Reviewer for MathSciNet, 2019-present.
- Organizer of the Algebraic Geometry and Topology Seminar at the Wuhan math center, 2019-present.

References

Doctoral Supervisor
Charles Rezk, University of Illinois at Urbana-Champaign, `rezk@math.uiuc.edu` 1(217) 265-6309.

Dissertation Committee Member
Matthew Ando, University of Illinois at Urbana-Champaign, `mando@illinois.edu` 1(217) 244-2846.

Cooperation Partner
Nora Ganter, The University of Melbourne, `nganter@unimelb.edu.au` 61(3)8344-9711.

Cooperation Partner
Chenchang Zhu, Georg-August-Universität Gottingen, `zhu@uni-math.gwdg.de` 49(551)39-7799.