FAN YE

Email: fanye@math.harvard.edu Homepage: scholar.harvard.edu/fanye

RESEARCH INTERESTS

Low-dimensional topology, especially knot theory, gauge theory and Floer homology

EMPLOYMENT

Benjamin Peirce Fellow, Harvard University *07/2022-06/2025*

EDUCATION AND EXPERIENCE

Ph.D. in DPMMS, University of Cambridge, supervised by Jacob Rasmussen *10/2019-06/2022*
B.S. in School of Mathematical Sciences (SMS), Peking University *09/2015-06/2019*
Visitor, Beijing International Center for Mathematical Research (BICMR) *09/2020-04/2022*
Special Student Program, Massachusetts Institute of Technology (MIT) *01/2018-12/2018*

PUBLICATIONS AND PREPRINTS

2-torsion in instanton Floer homology *Joint with Zhenkun Li, submitted, arXiv:2405.16252.*

Knot surgery formulae for instanton Floer homology II: applications
Joint with Zhenkun Li, submitted, arXiv:2209.11018.

Guts of nearly fibered knots *Joint with Zhenkun Li, submitted, arXiv:2208.05382.*

Knot surgery formulae for instanton Floer homology I: the main theorem
Joint with Zhenkun Li, submitted, arXiv:2206.10077.

Small Dehn surgery and SU(2) *Joint with John A. Baldwin, Zhenkun Li, and Steven Sivek, Geom. Topol. 28(4): 1891–1922 (2024). DOI: 10.2140/gt.2024.28.1891, arXiv:2110.02874.*

SU(2) representations and a large surgery formula
Joint with Zhenkun Li, submitted, arXiv:2107.11005.

An enhanced Euler characteristic of sutured instanton homology
Joint with Zhenkun Li, IMRN 2023, rnad066. doi:10.1093/imrn/rnad066, arXiv:2107.10490.

Instanton Floer homology, sutures, and Euler characteristics
Joint with Zhenkun Li, Quantum Topol. 14 (2): 201–284 (2023). DOI: 10.4171/QT/182, arXiv:2101.05169.

Sutured instanton homology and Heegaard diagrams
Joint with John A. Baldwin and Zhenkun Li
Compos. Math. 159(9), 1898-1915 (2023). DOI: 10.1112/S0010437X23007303, arXiv:2011.09424.

Instanton Floer homology, sutures, and Heegaard diagrams
Joint with Zhenkun Li, J. Topol. 15(1): 39-107 (2022). DOI: 10.1112/topo.12218, arXiv:2010.07836.

Constrained knots in lens spaces
Algebr. Geom. Topol. 23(3): 1097–1166 (2023). DOI: 10.2140/agt.2023.23.1097, arXiv:2007.04237.

Ph.D. Thesis, New techniques in calculation of sutured instanton Floer homology:
by Heegaard diagrams, Euler characteristics, and Dehn surgery formulae
DOI: 10.17863/CAM.85094.

CONFERENCES AND TALKS

Seminar talk, University of Miami	*04/2024*
Seminar talk, Princeton University	*04/2024*
Seminar talk, Ohio State University (OSU)	*02/2024*
Seminar talk, University of Maryland (UMD)	*02/2024*
Seminar talk, Washington University in St. Louis (WUSTL)	*01/2024*
Seminar talk, University of Illinois Urbana-Champaign (UIUC)	*10/2023*
Seminar talk, Boston College	*09/2023*
Seminar talk, Harvard University	*09/2023*
Seminar talk, Academy of Mathematics and Systems Science, CAS, Beijing	*07/2021*
Seminar talk, Institute of Mathematics of the Polish Academy of Sciences	*07/2021*
Seminar talk, Max Planck Institute for Mathematics (MPIM), Bonn	*06/2023*
Seminar talk, California Institute of Technology (Caltech)	*05/2023*
Conference talk, Massachusetts Institute of Technology (MIT)	*05/2023*
Seminar talk, Brown University	*05/2023*
Conference talk, University of Miami	*04/2023*
Seminar talk, Stony Brook University	*10/2022*
Seminar talk, Peking University	*04/2022*
Seminar talk, Morningside Center of Mathematics Chinese Academy of Sciences	*04/2022*
Seminar talk, University of Warsaw	*12/2021*
Seminar talk, Gauge Theory Virtual	*11/2021*
Seminar talk, Massachusetts Institute of Technology (MIT)	*11/2021*
Seminar talk, California Institute of Technology (Caltech)	*10/2021*
Seminar talk, Peking University	*10/2021*
Seminar talk, Princeton University	*09/2021*
Summer School on 4-manifolds, Georgia Tech	*07/2021*
Group report, Summer Trisectors Workshop	*06/2021*
Conference talk, NCNGT2021	*06/2021*
Seminar talk, Peking University	*06/2021*
Seminar talk, Stanford University	*03/2021*
Seminar talk, Peking University	*03/2021*

SYNERGISTIC ACTIVITIES

Minicourses, BICMR	*10/2021*
Co-organizer for Harvard Gauge theory and Topology seminar	*09/2022-Now*

Referee for Forum Math. Pi., J. Differ. Geom., J. Topol., Quantum Topol., Algebraic & Geom. Topol., J. Knot Theory Ramif.