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PERSONAL Born October 25, 1989 in British Hong Kong.

RESEARCH INTERESTS Low-dimensional topology. Heegaard Floer theory. Contact geometry.

EMPLOYMENT

- 2017– **Louisiana State University**, Baton Rouge, LA.
Postdoctoral Researcher.
Mentor: David Shea Vela-Vick.
- 2017 **Columbia University**, New York, NY.
Lecturer, Summer Sessions.

EDUCATION

- 2012–2017 **Columbia University**, New York, NY.
Ph.D. in Mathematics.
Unoriented skein relations for grid homology and tangle Floer homology.
Advisors: Peter S. Ozsváth and Robert Lipshitz.
- 2008–2012 **Princeton University**, Princeton, NJ.
A.B. in Mathematics, *magna cum laude*, Phi Beta Kappa.
Advisors: John A. Baldwin and Peter S. Ozsváth.

AWARDS

- 2017–2019 **Croucher Foundation.**
Croucher Fellowship for Postdoctoral Research, declined.
- 2012–2017 **Columbia University.**
Dean's Fellow.
- 2012 **Princeton University.**
Middleton Miller '29 Prize for best independent work in mathematics.
- 2009 **Princeton University.**
Shapiro Prize for Academic Excellence for outstanding academic achievement and engagement in intellectual pursuits.

PREPRINTS AND PUBLICATIONS

1. *An unoriented skein relation via bordered–sutured Floer homology*, with David Shea Vela-Vick.
Submitted.
Available at [arXiv:1811.00134](https://arxiv.org/abs/1811.00134).
2. *Skein relations for tangle Floer homology*, with Ina Petkova.
Submitted. Previous version titled *An unoriented skein relation for tangle Floer homology*.
Available at [arXiv:1611.04065](https://arxiv.org/abs/1611.04065).
3. *Grid diagrams and Manolescu’s unoriented skein exact triangle for knot Floer homology*.
Algebr. Geom. Topol. **17** (2017), no. 3, 1283–1321.
Available at [arXiv:1305.2562](https://arxiv.org/abs/1305.2562).
4. *From self-similar structures to self-similar groups*, with D. J. Kelleher and B. A. Steinhurst.
Internat. J. Algebra Comput. **22** (2012), no. 7, 1250056, 16 pages.
Available at [arXiv:1011.1817](https://arxiv.org/abs/1011.1817).

ARTICLES IN PREPARATION

1. *Lagrangian cobordisms and the Legendrian invariant in grid homology*, with John A. Baldwin and Tye Lidman.
2. *Branched covers and combinatorial invariants of transverse knots*, with David Shea Vela-Vick.
3. *An unoriented skein exact triangle for unoriented knot Floer homology*.

INVITED CONFERENCE, COLLOQUIUM, AND LECTURE SERIES TALKS

- **AMS 2019 Spring Southeastern Sectional Meeting**, *upcoming*. Mar 15–17, 2019
Auburn University, Auburn, AL.
TBA.
- **AMS 2018 Fall Southeastern Sectional Meeting**. Nov 3, 2018
University of Arkansas, Fayetteville, AR.
GRID invariants obstruct decomposable Lagrangian cobordisms.
- **Chinese University of Hong Kong**. Jul 30, 2018
Knot theory and mathematical rigour.
- **AMS 2017 Spring Eastern Sectional Meeting**. May 7, 2017
Hunter College, City University of New York, New York, NY.
An unoriented skein relation for tangle Floer homology.
- **Floer Homologies and Topology of 4-Manifolds**. Apr 8, 2017
University of Massachusetts Amherst, Amherst, MA.
An unoriented skein relation for tangle Floer homology.

- **AMS 2016 Fall Western Sectional Meeting.** Oct 8, 2016
University of Denver, Denver, CO.
An unoriented skein exact triangle for tangle Floer homology.
- **AMS 2015 Fall Central Sectional Meeting.** Oct 4, 2015
Loyola University, Chicago, IL.
An unoriented skein exact triangle for tangle Floer homology.
- **Chinese University of Hong Kong.** Jun 24–Jul 6, 2015
Lecture series (five lectures).
Introduction to bordered Floer homology and related tangle invariants.
- **AMS 2010 Fall Eastern Sectional Meeting.** Oct 2, 2010
Syracuse University, Syracuse, NY.
From self-similar structures to self-similar groups.

INVITED SEMINAR TALKS

- **Princeton University / IAS Symplectic Geometry Seminar,** at Princeton. Nov 26, 2018
Some developments in the Legendrian GRID invariants.
- **Chinese University of Hong Kong.** Aug 9, 2018
An unoriented skein relation for bordered sutured Floer homology.
- **Chinese University of Hong Kong.** Aug 2, 2018
GRID invariants obstruct decomposable Lagrangian cobordisms.
- **Chinese University of Hong Kong.** Jul 30, 2018
Combinatorial invariants of transverse links via cyclic branched covers.
- **Caltech Geometry and Topology Seminar.** May 4, 2018
Unoriented skein relations for link and tangle invariants in Heegaard Floer theory.
- **UCLA Topology Seminar.** May 2, 2018
Combinatorial invariants of transverse links via cyclic branched covers.
- **Joint Georgia Tech–UGA Geometry Topology Seminar,** at Georgia Tech. Feb 19, 2018
Unoriented skein relations for link and tangle invariants in Heegaard Floer theory.
- **Triangle Topology Seminar,** at North Carolina State University. Jan 23, 2018
Combinatorial invariants of transverse links via cyclic branched covers.
- **Dartmouth Geometry & Topology Seminar.** Jan 31, 2017
Unoriented skein relations for grid homology and tangle Floer homology.

- **Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar.**
Unoriented skein relations for grid homology and tangle Floer homology. Nov 4, 2016
- **Chinese University of Hong Kong.** Aug 31, 2015
The unoriented skein exact triangle for grid homology.
- **Rice Topology Seminar.** Apr 20, 2015
The unoriented skein exact triangle for grid homology.
- **Princeton Low-Dimensional Topology Seminar.** Dec 6, 2011
Grid diagrams and Manolescu's unoriented skein exact triangle for knot Floer homology.

OTHER TALKS

- **Chinese University of Hong Kong.** Aug 6, 2018
- **LSU Virtual Topology Seminar.** Nov 8 & 15, 2017
- **LSU Virtual Topology Seminar.** Oct 4, 2017
- **LSU Virtual Topology Seminar.** Sep 13, 2017
- **Columbia Topology Reading Seminar.** Apr 18, 2017
- **Columbia Topology Reading Seminar.** Feb 14, 2017
- **Columbia Topology Reading Seminar.** Jan 24, 2017
- **Columbia Graduate Student Morse Theory Seminar.** Apr 8, 2016
- **Columbia Graduate Student Topology Seminar.** Nov 25, 2014
- **Columbia Undergraduate Mathematics Seminar.** Oct 29, 2014
- **Columbia Reading Group on Categorical Dynamics and Symplectic Topology.**
Sep 10 & 17, 2014
- **Columbia Graduate Student Topology Seminar.** Sep 9 & 23, 2014
- **Columbia Informal² Topology Seminar.** May 1, 2013
- **Columbia Informal² Topology Seminar.** Jan 30, 2013
- **Columbia Undergraduate Mathematics Seminar.** Oct 25, 2012
- **Princeton Riemannian Geometry Junior Seminar.** Dec 15, 2010

TEACHING

- **Louisiana State University.**
 - **Instructor.**
 - MATH 4997, *Vertically Integrated Research*, with D. Shea Vela-Vick. Spring 2019
 - MATH 4997, *Vertically Integrated Research*, with D. Shea Vela-Vick. Fall 2018
 - MATH 7590, *Heegaard Floer Homology*. Fall 2018
 - MATH 1550, *Calculus I*. Fall 2017
- **Columbia University.**
 - **Instructor.**
 - MATH S1102, *Calculus II*. Summer 2017
 - MATH UN3952, *Undergraduate Seminars II*. Spring 2017

- MATH UN3951, *Undergraduate Seminars I*. Fall 2016
- MATH S2500, *Analysis and Optimization*, with S. Ali Altuğ. Summer 2016
- MATH V1101, *Calculus I*. Spring 2016
- MATH V1102, *Calculus II*. Fall 2014
- **Teaching Assistant.**
 - MATH S1102, *Calculus II*. Summer 2016
 - MATH V1201, *Calculus III*. Fall 2015
 - MATH V1201, *Calculus III*. Spring 2015
 - MATH S4061, *Introduction to Modern Analysis I*. Summer 2014
 - MATH V2010, *Linear Algebra*. Spring 2014
 - MATH V1201, *Calculus III*. Fall 2013
- **Summer Undergraduate Research Teaching Assistant.**
 - *Left-orderable groups and knot surgery*. Summer 2014
- **Department Assistant.** Summer 2016
- **Science Honors Program Instructor.**
 - *Knots and Manifolds*. Spring 2016
 - *Knots and Manifolds*. Fall 2015
 - *Knot Theory*, with Andrea Heyman. Fall 2014
 - *Knot Theory*, with Andrea Heyman. Spring 2014
- **Chinese University of Hong Kong.**
 - **Enrichment Programme for Young Mathematics Talents Teaching Assistant.**
 - *Towards Differential Geometry*. Summer 2013

SHORT-TERM VISITS

- **Chinese University of Hong Kong, Hong Kong.** Jul 26–Aug 7, 2018
Academic Visitor.
- **Chinese University of Hong Kong, Hong Kong.** Jun 22–Aug 19, 2015
Academic Visitor.
- **Simons Center for Geometry and Physics, Stony Brook, NY.** May 6–10, 2013
Visitor.

SERVICE AND SYNERGISTIC ACTIVITIES

- **Referee** in geometry and topology.
- **Supervision of undergraduate and graduate research.**
 - **Supervise students in an ongoing research course** at LSU. Fall 2018–
 - Groups of graduate and undergraduate students together learn advanced materials in knot theory, with a view towards specific research projects.
 - Graduate students take on a leadership role in their respective groups.

- With D. Shea Vela-Vick, mentor all participants in learning, lecturing, research, and leadership.
- **Provide additional guidance** to graduate students of D. Shea Vela-Vick. Fall 2017–
 - Weekly meetings on topics including Morse theory, characteristic classes, Kirby calculus, and Heegaard Floer theory.
 - Help with tackling both theoretical problems and computations in research projects.
 - Organize reading sessions and seminars on career-related activities.
- **Supervised undergraduate students in an REU** run by Jennifer Hom. Summer 2014
 - Taught concepts from fundamental groups to Heegaard Floer theory to students ranging from rising sophomores to rising seniors.
 - Provided hands-on guidance in computing knot groups of twisted torus knots.
 - Project resulted in a published paper, showing certain twisted torus knots have non-left-orderable knot groups, as evidence for the L-space conjecture.
- **Dissemination of knowledge.**
 - **Instructor** of a graduate topic course in Heegaard Floer homology at LSU. Fall 2018
 - Held in coordination with the Department of Mathematics of the U of Arkansas.
 - Broadcast online to Arkansas using sophisticated technology that allows seamless, real-time interaction with the online audience.
 - **Coordinator** of a long-term project to facilitate inter-university learning. Spring 2017–
 - Coordination with topology groups at universities in the US Southeast.
 - The topic course above is the first step; a follow-up course in symplectic geometry, taught by D. Shea Vela-Vick, will be offered in Spring 2019.
- **Seminar organizer.**
 - **LSU Virtual Topology Seminar**, with D. Shea Vela-Vick. Fall 2017–
 - Broadcast online in real time and attended by researchers in the US Southeast.
 - **Columbia Topology Reading Seminar**, with Akram Alishahi. Fall 2016
 - **Columbia Graduate Student Topology Seminar.** Fall 2014

MISCELLANEOUS

- **Programming languages:** Python, Java, C++, C, Sage, Mathematica.
- **Languages:** Native Cantonese and English; fluent Mandarin Chinese; proficient Japanese; reading comprehension and basic conversational ability in Italian; mathematical reading comprehension in French.

Last updated: Dec 3, 2018.