

CURRICULUM VITAE - TYE LIDMAN

- CONTACT INFORMATION** Department of Mathematics
North Carolina State University
3246 SAS Hall
Raleigh, NC 27695 USA
E-mail: tlid@math.ncsu.edu
- PERSONAL INFORMATION** U.S. Citizen
- RESEARCH INTERESTS** Low-dimensional topology, Floer homology, gauge theory, orderability of groups, contact and symplectic topology, categorification
- ACADEMIC EMPLOYMENT**
- North Carolina State University**, Fall 2016 -
Assistant Professor
- Institute for Advanced Study**, Fall 2015 - Spring 2016
Member & Program Participant (*Geometric Structures on Three-Manifolds*)
- University of Texas at Austin**, Fall 2012 - Spring 2015
RTG Instructor
- EDUCATION**
- University of California, Los Angeles**
Ph.D., Mathematics, 2012
M.A., Mathematics, 2010
- University of California, Berkeley**
B.A., Mathematics, 2007
- Minor in Dance and Performance Studies
- GRANTS, HONORS, AND AWARDS**
- Alfred P. Sloan Fellowship** 2018-2020
- Principal Investigator, NSF Grant** *Dehn surgery, four-manifolds, and symplectic topology (DMS-1709702)* 2017-2020
- AIM SQuaRE** (joint with Jennifer Hom, Sam Lewallen, and Liam Watson) 2014-2016
- UCLA Dissertation Year Fellowship** (UCLA) 2011 - 2012
- Stone Fellowship** (UCLA) 2008 - 2009
- NSF VIGRE Graduate Fellowship** (UCLA) 2007 - 2011
- PUBLICATIONS**
- A. Levine and T. Lidman.** Simply-connected spineless 4-manifolds. Submitted (2018)
Available at *arXiv:1803.01765*.

- K. Hendricks, J. Hom, and T. Lidman.** Applications of involutive Heegaard Floer homology. Submitted (2018). Available at *arXiv:1802.02008*.
- J. Hom, A. Levine, and T. Lidman.** Concordance in homology spheres. Submitted (2018). Available at *arXiv:1801.07770*.
- T. Lidman and C. Manolescu.** Floer homology and covering spaces. *Geom. Topol.*, 22 (2018) 2817-2838.
- T. Lidman and C. Manolescu.** The equivalence of two Seiberg-Witten Floer homologies. *Astérisque*, 399 (2018).
- J. Hom and T. Lidman.** A note on surgery obstructions and hyperbolic integer homology spheres. *Proc. Amer. Math. Soc.*, 146 (2018), no. 3, 1363-1365.
- T. Lidman, A.H. Moore, and M. Vazquez.** Distance one lens space fillings and band surgery on the trefoil knot. Submitted (2017) *arXiv:1710.07418*.
- T. Lidman and E. Tweedy.** A note on concordance properties of fibers in Seifert homology spheres. *Can. Math. Bull.* to appear (2017). Preprint available at *arXiv:1707.09648*.
- C. Gordon and T. Lidman.** Knot contact homology detects cabled, composite, and torus knots. *Proc. Amer. Math. Soc.* 145 (2017), no. 12, 5405-5412.
- C. Gordon and T. Lidman.** Corrigendum to “Taut foliations, left-orderability, and cyclic branched covers”. *Acta Math. Vietnam.* 42 (2017), no. 4, 775-776.
- T. Lidman and S. Sivek.** Quasi-alternating links with small determinant. *Math. Proc. Cambridge.*, 162 (2017), no. 2, 319-336.
- J. Hom, T. Lidman, and L. Watson.** The Alexander invariant, Seifert forms, and categorification. *J. Topology*, 10, (2017), 22-100.
- T. Lidman and A.H. Moore.** Cosmetic surgeries in L-spaces and nugatory crossings. *Trans. Amer. Math. Soc.*, 369 (2017), no. 5, 3639-3654.
- J. Hom and T. Lidman.** A note on positive definite symplectic four-manifolds. *J. Eur. Math. Soc.* to appear (2016). Preprint available at *arXiv:1510.00373*.
- J. Hom, C. Karakurt, and T. Lidman.** Surgery obstructions and Heegaard Floer homology. *Geom. Topol.*, 20 (2016) 2219-2251.
- T. Lidman and S. Sivek.** Contact structures and reducible surgeries. *Compos. Math.*, 152 (2016), no. 1, 152-186.
- T. Lidman and A.H. Moore.** Pretzel knots with L-space surgeries. *Mich. Math. J.*, 65 (2016), no. 1, 105-130.
- T. Lidman.** Heegaard Floer homology and triple cup products. *Geom. Topol.*, revise and resubmit (2015). Preprint available at *arXiv:1011.4277*.
- J. Hanselman, C. Kutluhan, and T. Lidman.** A remark on the geography problem in Heegaard Floer homology. Submitted (2015). *arXiv:1506.05020*.
- J. Hom, T. Lidman, and N. Zufelt.** Reducible surgeries and Heegaard Floer homology. *Math. Res. Lett.*, 22 (2015), no. 3, 763-788.
- C. Karakurt and T. Lidman.** Rank inequalities for the Heegaard Floer homology of Seifert homology spheres. *Trans. Amer. Math. Soc.*, 367 (2015), 7291-7322.
- J. Hom, T. Lidman, and F. Vafaee.** Berge-Gabai knots and L-space satellite operations. *Algebr. Geom. Topol.*, 14 (2014), no. 6, 3745-3763.

C. Gordon and T. Lidman. Taut foliations, left-orderability, and cyclic branched covers. *Acta Math. Vietnam.*, 39 (2014), no. 4, 599-635.

T. Lidman and L. Watson. Non-fibered L-space knots. *Pacific J. Math.*, 267 (2014), no. 2, 423-429.

T. Lidman. On the infinity flavor of Heegaard Floer homology and the integral cohomology ring. *Comment. Math. Helv.*, 88 (2013), no. 4, 875-898.

A. Clay, T. Lidman, and L. Watson. Graph manifolds, left-orderability and amalgamation. *Algebr. Geom. Topol.*, 13 (2013), no. 4, 2347-2368.

T. Lidman. Framed Floer homology. *arXiv:1109.3756*.

S. Evans and T. Lidman. Asymptotic evolution of acyclic random mappings. *Electron. J. Probab.* **12** (2007), 1051-1180.

S. Evans and T. Lidman. Expectation, conditional expectation and martingales in local fields. *Electron. J. Probab.* **12** (2007), 498-515.

CONFERENCE
TALKS

Tech Topology Conference, Georgia Tech, 2017

Midwestern Geometry Conference, Kansas State, 2017

Mathematical Congress of the Americas, Montreal, CA, 2017

Floer Homotopy Theory, UCLA, 2017

Georgia International Topology Conference, University of Georgia, 2017

Graduate Student Topology and Geometry Conference, *Young faculty speaker*, Michigan State University, 2017

Central Sectional Meeting of the AMS, University of St. Thomas, 2016

Western Sectional Meeting of the AMS, University of Denver, 2016

Workshop on Flavours of Gauge Theory (Rubermania!), Fields Institute, 2016

Knots in the Triangle, North Carolina State University, 2016

AMS/MAA Joint Mathematics Meetings, Seattle, WA, 2016

Flows, Foliations, and Contact Structures, Institute for Advanced Study, 2015

Princeton Low-Dimensional Topology Workshop, Princeton University, 2015

Central Sectional Meeting of the AMS, Michigan State University, 2015

Eastern Sectional Meeting of the AMS, Georgetown University, 2015

AMS/MAA Joint Mathematics Meetings, San Antonio, TX, 2015

Western Sectional Meeting of the AMS, San Francisco State University, 2014

AMS/MAA Joint Mathematics Meetings, Baltimore, MD, 2014

Central Sectional Meeting of the AMS, Washington University in St. Louis, 2013

Topology and Invariants of Smooth 4-Manifolds, University of Minnesota, 2013

Knots in Washington, George Washington University, 2013

Eastern Sectional Meeting of the AMS, Boston College, 2013

Ordered Groups and Topology, Banff International Research Station, 2012

Graduate Student Topology and Geometry Conference, Michigan State University, 2011

Interactions Between Contact and Symplectic Topology and Gauge Theory in Dimensions 3 and 4, Banff International Research Station, 2011

Western Sectional Meeting of the AMS, University of California, Los Angeles, 2010

SEMINARS &
COLLOQUIA

2018: UT Austin, Iowa, MIT

2017: UMiami, UVa, Columbia, Rice, MSU, UMinnesota, Georgia Tech, UNL, UC Davis, Princeton

2016: UC Davis, NC State, UC Riverside, UT Austin, UMass, Rice, UQAM, UNL, Duke

2015: UCLA, Caltech, Rice, PATCH (Bryn Mawr/Haverford/Penn/Temple), UC Davis, Princeton, Columbia, UGA

2014: UCSB, UCLA, Princeton, Oklahoma State University, University of Glasgow, University of Arkansas, Columbia, Georgia Tech

2013: LSU, Harvard, GWU, Stony Brook, Columbia, University of Nevada Reno

2012: UC Riverside, Caltech, Rice, Columbia

2011: Columbia, UVa, UT Austin

2010: Caltech

TEACHING
EXPERIENCE

North Carolina State University

- Instructor for:

Algebraic Topology, Introduction to Topology, Topics in Topology, Calculus II

University of Texas at Austin

- Teaching Conferences:

College of Natural Sciences *Teaching Strategies Workshop*, Spring 2013

- Instructor for:

Advanced Algebraic Topology, Linear Algebra and Matrix Theory, Multivariable Calculus, Discrete Mathematics, Matrices and Matrix Computations

University of California, Los Angeles

- Teaching Assistant for:

Precalculus, Calculus for Life Science Students, Differential and Integral Calculus, Discrete Structures, Analysis, Topology, History of Mathematics, Foundations of Geometry, Honors Linear Algebra, Optimization

POSTDOCS
MENTORED

Juanita Pinzon-Caicedo (2017-)

GRADUATE
ADVISING

Claire Zajaczkowski (PhD expected 2019)
Robert DeYeso (PhD expected 2021)

UNDERGRADUATE
ADVISING

Summer 2014, Spring 2015: Nick Bhattacharya. Supervised reading in algebraic topology and symplectic geometry.

Summer 2013: Dean Menezes, Nathan Offers, Alec Train. Organized an REU to compute the Heegaard Floer homology of certain Brieskorn spheres.

Spring 2013: Nathan Offers. Supervised reading and research on the relationship between knots and orderable groups.

SERVICE

Referee/Reviewer for:

- Math Reviews, Communications in Analysis and Geometry, Compositio Mathematica, Duke, Geometry and Topology, Journal of Fixed Point Theory and Applications, Math Annalen, New York Journal of Mathematics, Proceedings of the AMS, Proceedings of the LMS, Transactions of the AMS, Turkish Journal of Mathematics

Conferences/workshops co-organized:

- “Symplectic four-manifolds through branched covers”, AIM, 2018
- “Southeastern Undergraduate Mathematics Workshop”, Georgia Tech, 2017
- AMS Special Session “Low-dimensional topology”, NC State, 2016
- Texas Geometry and Topology Conference, UT Austin, 2014
- AMS Special Session “Invariants in low-dimensional topology”, University of Maryland, Baltimore County, 2014

Seminars organized:

NCSU: Triangle Topology seminar with Duke and UNC (2016-), Geometry/Topology seminar (2016-), Topology and geometry working seminars (2016-)

IAS: Gauge theory working seminar (2016)

UT Austin: Geometry seminar (2014-2015), GADGET seminar (2014-2015), Geometry/topology working seminar (2012-2015)

UCLA: GSO Presents... (2010-2012, founder), Los Angeles Graduate Student Geometry and Topology Seminar (2010-2011, co-founder)

Talks for high school/undergraduate students:

- *NCSU SUM Seminar Series*, 2016.
- *UT Math Club*, 2014.
- *Los Angeles Math Circle*, Lectured to and did problems with high school students about braids and knot theory, 2012

Other Service:

- *Thesis Committee Member:* Ahmad Issa (UT Austin, 2017-), Alex Chandler (NCSU, 2017-), Victor Summers (NCSU, 2017-), Alireza Behtash (NCSU Physics, 2017-).
- *Arts Outreach:* Collaboration with Raleigh dance company *Black Box Dance Theater* to create educational performances and workshops combining topology and dance, 2016-
- *Trained Ally:* Attended trainings/workshops at Gender and Sexuality Center (UT Austin) and GLBT Center (NCSU), and participated in GLBT Advocate Program (NCSU). This included obtaining certification as an ally to the LGBT community on both campuses, 2012-2018
- *Committee Work:* Preliminary Exams Committee (NCSU), 2017-2018
- *Volunteer:* Assisted weekly to help create audio mathematics textbooks at *Learning Ally* for people with dyslexia and print disabilities, 2011 - 2012
- *President/Co-president:* Mathematics Graduate Student Outreach: organized academic and social events for all UCLA mathematics graduate students, 2010 - 2011/2011 - 2012