

# Bo Lin

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## CONTACT INFORMATION

School of Mathematics  
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## EMPLOYMENT HISTORY

Visiting assistant professor, School of Mathematics, Georgia Institute of Technology, January 2019 - May 2022.

Lecturer, Dept. of Mathematics, University of Texas, Austin, July 2018 - December 2018.

Postdoctoral fellow, Institute of Mittag-Leffler (Sweden), February 2018 - April 2018.

Simons postdoctoral fellow, University of Texas, Austin, September 2017 - April 2018.

## RESEARCH INTERESTS

Mathematical Biology, Tropical Geometry, Combinatorics, Convex Geometry.

## EDUCATION

### University of California, Berkeley

Ph.D. in Mathematics, August 2017.

- Advisor: Bernd Sturmfels.
- Dissertation Title: combinatorics and computations in tropical mathematics.

### Peking University, Beijing, China

B.S. in Mathematics, July, 2013

## PUBLICATIONS

**Moving sidewinding forward: optimizing contact patterns for limbless robots via geometric mechanics**, with B. Chong et al. *Proceedings of Robotics: Science and Systems XVII*.

**Reconstruction of Backbone Curves for Snake Robots**, with T. Wang et al. *IEEE Robotics and Automation Letters*, **6** (2021) 3264-3270.

**Tropical optimal transport and Wasserstein distances**, with W. Lee, W. Li, and A. Monod. *Information Geometry* (2021).

**Optimizing coordinate choice for locomotion systems with toroidal shape spaces**, with B. Chong et al. *IEEE/RSJ International Conference on Intelligent Robots and Systems*, (2020) 7501-7506.

**Two-player incentive compatible outcome functions are affine maximizers**, with N. Tran. *Linear Algebra and its Applications*, **578** (2019) 133-152.

**Tropical Fermat-Weber Points**, with R. Yoshida. *SIAM Journal on Discrete Mathematics*, **32** (2018) 1229-1245.

**Computing Linear Systems on Metric Graphs**, *Journal of Symbolic Computation*, **87** (2018) 54-67.

**Convexity in Tree Spaces**, with B. Sturmfels, X. Tang, and R. Yoshida, *SIAM Journal on Discrete Mathematics* **31** (2017) 2015-2038.

**Tropical Hodge Bundle**, with M. Ulirsch, *Combinatorial Algebraic Geometry*, 353-368, Fields Institute Communications (2017), Volume 80, Springer 2017, Editors: Greg Smith and Bernd Sturmfels.

**Almost-toric Hypersurfaces**, *Beiträge zur Algebra und Geometrie*, **57** (2016) 343-359.

## PREPRINTS

**Tropical Geometric Variation of Phylogenetic Tree Shapes**, with A. Monod and R. Yoshida.  
**Bounding The Number of Linear Regions in Local Area for Neural Networks with ReLU Activations**, with R. Zhu and H. Tang.  
**Linear and Rational Factorization of Tropical Polynomials**, with N. Tran.

TEACHING  
EXPERIENCES

**Math 2603 - Introduction to Discrete Mathematics** at Georgia Tech. Instructor, Spring 2022.  
**Math 1553 - Introduction to Linear Algebra** at Georgia Tech. Instructor, Fall 2021.  
**Math 3012 - Introduction to Applied Combinatorics** at Georgia Tech. Instructor, Fall 2020.  
**Math 2603 - Introduction to Discrete Mathematics** at Georgia Tech. Instructor, Fall 2019.  
**Math 325K - Discrete Mathematics** at UT Austin. Instructor, Fall 2018.  
**Math 328K - Introduction to Number Theory** at UT Austin. Instructor, Summer 2018.  
**Math 10B - Methods of Mathematics: Calculus, Statistics, and Combinatorics** at UC Berkeley. Graduate Student Instructor (GSI), Spring 2017.  
**Math 10A - Methods of Mathematics: Calculus, Statistics, and Combinatorics** at UC Berkeley. GSI, Fall 2015.  
**Math 32 - Precalculus** at UC Berkeley. GSI, Fall 2014.  
**Math 32 - Precalculus** at UC Berkeley. GSI, Spring 2014.  
**Math 54 - Linear Algebra and Differential Equations** at UC Berkeley. GSI, Fall 2013.

SELECTED INVITED  
TALKS

**Reconstruction of Backbone Curves for Snake Robots**  
 APS March Meeting, online, March 2021.

**Geometry of Phylogenetic Tree Spaces**

SIAM Annual Meeting, Portland, Oregon, July 2018.  
 Stochastic Colloquium, University of Göttingen (Göttingen, Germany), April 2018.

**Computing Linear Systems on Metric Graphs.**

Algorithms and Effectivity in Tropical Mathematics and Beyond, Schloss Dagstuhl, November 2016.  
 AMS Sectional Meeting, University of St. Thomas, October 2016.  
 SIAM Discrete Math Conference, Georgia State University, June 2016.

**Tropical Fermat-Weber Points**

CombinaTexas, Texas A&M University, February 2018.  
 SIAM Applied Algebraic Geometry Conference, Georgia Institute of Technology, August 2017.

HONORS AND  
AWARDS

Best Paper Award finalist, Robotics, Science and Systems 2021 Conference, Summer 2021  
 Max-Planck-Institute for Mathematics in the Sciences, Visiting Scholar, Fall 2016  
 Coleman Fellowship in Mathematics, Spring 2016

ACADEMIC EVENTS  
CO-ORGANIZED

**Mathematical Biology Seminar**, Georgia Institute of Technology, Fall 2019 - Spring 2022.  
**Algebra Seminar**, Georgia Institute of Technology, Fall 2019.

## OTHERS SERVICES

**Atlanta Science Festival**, Representative of SCMB, Atlanta, Georgia, March 2019.  
**CNS Family Day**, Representative of Dept. of Math, University of Texas, Austin, October 2017.