

# Curriculum Vitae

## Kyle Chapman

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University of Georgia  
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## Research Interests:

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Physical Knot Theory, Topological Knot Theory, Algorithm Design, Braid Theory, Planar Algebras, Game Theory

## Education:

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### UCSB:

September 2009 – June 2015

PhD Program, Mathematics

Masters Awarded 2011

Emphasis in Geometric Topology

Adviser: Ken Millett

### CalPoly: San Luis Obispo:

September 2006 - June 2009

B.S. in Mathematics

Senior Thesis: An Alternate Algorithm for Fully Solving Matrix Games in Better Expected Time

## Employment and Teaching Experience:

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### - Temporary Assistant Professor (UGA):

Fall 2016: Precalculus

Spring 2017: Precalculus

Fall 2017: Mathematics of Decision Making

### - Guest Lecturer (UCSB):

Fall 2015: Calculus I with applications

Winter 2016: Calculus for Social Sciences

Spring 2016: Calculus I with Applications

Spring 2016: Calculus II with Applications

### - Instructor (UCSB):

Summer 2012: Calculus I with Applications

Summer 2013: Methods of Proof

Summer 2015: Partial Differential Equations

### - Teaching Assistant (UCSB):

September 2009 – June 2016

### - Teaching Assistant (CalPoly):

January 2008 – June 2009

### - CalPoly Math Tutor:

January 2008 – June 2009

## Papers

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### **Accepted:**

Off-Lattice Random Walks with Excluded Volume: A New Method of Generation, Proof of Ergodicity and Numerical Results

With Laura Plunkett; Accepted by Journal of Physics A: Mathematical and Theoretical  
Arxiv:1706.08911

Sampling Spaces of Thick Polygons

With Ken Millett and Laura Plunkett; To Appear in the Book "New Directions in Geometric and Applied Knot Theory"

### **Preprints and In Preparation**

An Ergodic Algorithm for Generating Knots with a Prescribed Thickness

Arxiv:1603.02770

Sampling Knots Using Orthoschemes: a Subdivision of the Moment Polytope

In Preparation

## Awards and Honors:

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- Department of Mathematics Outstanding Teaching Award  
2014: Award for Excellence in Teaching within the Mathematics department of UCSB
- Department of Mathematics Graduate Student Research Grant  
Summer 2014: Grant to provide funding during period of research
- Winner of the Ralph E. Weston Memorial Award in 2008 and 2009;  
Awarded for the highest CalPoly Putnam Score
- Second Place in Create Space Programing Competition;  
A CalPoly wide competition in speed programming

## Conferences and Seminar Talks:

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- November 2017 Sampling Finite Sets; From Partitions to Orthoschemes  
Geometry and Topology of Knotting and Entanglement in Proteins: CMO-BIRS
- September 2017 Sampling Finite Sets; From Partitions to Orthoschemes  
UGA Geometry Seminar
- January 2017 Attended Joint Math Meeting in Atlanta
- October 2016 Randomly Sampling a Manifold using Monte Carlo Markov Chains  
AMS Sectional Meeting at University of St. Thomas
- October 2016 Sampling Knots with Thickness  
UGA Geometry Seminar
- January 2016 Attended Joint Math Meeting in Seattle
- October 2015 Attended AMS Sectional Meeting at CSU Fullerton
- June 2015 An Ergodic Algorithm for Randomly Sampling Knots of a Prescribed Thickness  
Thesis Defense: University of California Santa Barbara
- May 2015 Attended NCGOA Spring Institute at Vanderbilt  
Funding provided by conference
- January 2014 An alternative to the Shapley-Snow Algorithm for Completely Solving Matrix Games  
Combinatorics and Discreet Geometry Seminar: UC Santa Barbara
- October 2013 Combinatorial Games and Construction of Surreal Numbers  
Combinatorics and Discreet Geometry Seminar: UC Santa Barbara

June 2013      A Diagrammatic Presentation for the  $\widetilde{E}_8$  Planar Algebra  
                  Advancement Talk: University of California Santa Barbara  
December 2010 Topological Games and the Axiom of Determinacy  
                  Graduate Student Topology Seminar

Additional Research Skills:

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- Writing in TeX
- Programming in Python, Java, C

References available upon request