CHRISTOPHER CORNWELL

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POSITIONS

Assistant Professor *2016 - Present*
Department of Mathematics, Towson University, Towson MD
CIRGET Postdoctoral Fellow *2014 - 2016*
Département de Mathématiques, UQÀM, Montréal QC
Visiting Assistant Professor *2011 - 2014*
Department of Mathematics, Duke University, Durham NC

EDUCATION

Michigan State University, Lansing MI *2011*
Ph.D. Mathematics, Department of Mathematics. *Advisor:* Efstratia Kalfagianni
Thesis: Invariants of topological and Legendrian links in lens spaces with a universally tight contact structure.
Brigham Young University, Provo UT *2006*
M.S. Mathematics.
Brigham Young University, Provo UT *2004*
B.S. Mathematics

AWARDS

Fisher Endowed Professor in Math. & Comp. Sciences, Towson Univ. *2017 - 2020*
Project NExT Fellow, MAA *2017*
Fellow, Institut Mittag-Leffler *2015*
RTG Graduate Fellow, NSF, DMS-0353717 *2006-2008*

FUNDING

School of Emerging Technologies Grant (co-PI), $23,575.90. *2018 - 2019*
Development of AR-based mathematical learning game
USM, M.O.S.T. High-impact OER Mini-grant (co-PI), $2500. *2018 - 2019*
AMS & Simons Foundation Travel Grant, $4000. *2012 - 2013*

PUBLICATIONS

A strong correspondence principle for smooth, monotone environments (with F. Christensen)
J. Math. Econ. **77** (2018), 15 - 24.

Berge duals and universally tight contact structures
Topol. Appl. **236** (2018), 26 - 43.

KCH representations, augmentations, and A-polynomials
J. Symplect. Geom. **15** (2017), 983 - 1017.

Augmentation rank of satellites with braid pattern (with D. Hemminger)
Commun. Anal. Geom. **24** (2016), 939 - 967.

Obstructions to Lagrangian concordance (with L. Ng and S. Sivek)

▮ Algebr. Geom. Topol. **16** (2016), 797 - 824.

Knot contact homology and representations of knot groups
▮ J. Topology **7** (2014), 1221 - 1242.

A polynomial invariant for links in lens spaces
▮ J. Knot Theory and its Ramifications **21** (2012), #1250060 (31 pages).

Bennequin type inequalities in lens spaces
▮ Int. Math. Res. Notices **2012**, 1890 - 1916.

Counting fundamental paths in certain Garside semigroups (with S. Humphries)
▮ J. Knot Theory and its Ramifications **17** (2008), 191 - 211.

PREPRINTS AND ABSTRACTS

Using computing software in Calculus I: Replacing coding with dynamic visualizations (with K. Frank and N. McNew)
▮ presentation JMM 2019, paper in preparation.

Unknotted cycles (with N. McNew)
▮ paper in preparation.

Character varieties of knot complements and branched double-covers via the cord ring
▮ submitted for publication.

COURSES TAUGHT

At Towson University

Calculus I	*Fall 2016, Fall 2017, Fall 2018*
Calculus II	*Spring 2017*
Introduction to Abstract Mathematics	*Spring 2017, Fall 2018*
Introduction to Abstract Algebra	*Fall 2016*
Honors Independent Study	*Fall 2018*
Special Topics in Applied Math (Computational Topology)	*Spring 2018*
Masters Internship I	*Fall 2016, Fall 2018*
Masters Internship II	*Spring 2017*
Applied Math Project I	*Summer 2018*
Applied Math Project II	*Fall 2018*

At McGill University

Linear Algebra	*Fall 2014*
Applied Linear Algebra	*Winter 2016*

At Duke University

Multivariable Calculus for Economists	*Fall 2013, Spring 2014*
Calculus III	*Fall 2011, Spring 2012, Fall 2012, Spring 2013*
Linear Algebra	*Spring 2013*
Differential Geometry	*Spring 2012*
Topology	*Fall 2013*

Research independent study *Fall 2012, Fall 2013*
Special topics mini-course (Contact geometry) *Spring 2013*

MENTORING - STUDENT RESEARCH

Undergraduate

Derek Marguiles, at Towson Univ., supported with Fisher funds. *2018 - 2019*
Supervised research: data analytics for TU Men's Basketball team

David Hemminger, Duke PRUV program & research for senior thesis. *2013 - 2014*
Supervised summer research, independent study, and writing senior thesis
Currently: David is a graduate student and TA at UCLA.

Daniel Vitek, Duke PRUV program & research for senior thesis. *2012 – 2014*
Supervised summer research, independent study, and writing senior thesis
Currently: Daniel is an NSF Graduate Research Fellow at Princeton University.

Graduate

Nestor Ashbery, APIM Masters program, Towson University. *2016 - 2017*
Guided in completion of Masters internship project (graduated 2017)

Alex Poyneer, APIM Masters program, Towson University. *2018*
Guided in completion of Masters thesis project (graduated Fall 2018)

Rachel Gorenstein, APIM Masters program, Towson University. *2018 - Present*
Guided towards completion of Masters internship project

SELECTED TALKS

Conferences & Colloquiua

KCH representations: A new point of view (Nov 2016)
- AMS Sectional Meeting, North Carolina State University.

Augmentations in knot contact homology and SL(2,C) character varieties (June 2016)
- Conference "Perspectives in topology and geometry of 4-manifolds," Dubrovnik, Croatia.

Augmentation varieties (Apr 2016)
- Conference "Spring Lecture Series," University of Arkansas.

Knot contact homology and a question of Cappell and Shaneson (Jan 2014)
- Conference "Knots in Washington," George Washington University.

Knots and homological invariants from contact structures (Dec 2014)
- Department Colloquium, University of Iowa.

Knot contact homology and representations of knot groups (July 2013)
- Workshop "Low-dimensional Topology after Floer," University of Montreal.

Seminars

Analyzing high-dimensional data (Oct 2017)
- Graduate Student Seminar, Towson University.

Understanding character varieties of knot complements... (Sep 2015)

▮ Geometry & Topology Seminar, McMaster University.

Knot contact homology (Feb 2015)
▮ Algebra & Geometry Seminar, Australia National University, Canberra.

Berge duals and universally tight contact structures (Oct 2014)
▮ Geometry/Topology Seminar, Boston College.

Knot contact homology and the classical A-polynomial (Mar 2014)
▮ Symplectic Geometry, Gauge Theory, and Categorification Seminar, Columbia University.

Skein polynomials and the classical contact invariants in lens spaces (Nov 2012)
▮ Geometry and Topology Seminar, Caltech.

SERVICE

Technology & Web page, Chair *2018 - Present*
Department of Mathematics, Towson University
APIM Graduate Studies Committee *2016 - Present*
Department of Mathematics, Towson University
Pure Mathematics Committee *2016 - Present*
Department of Mathematics, Towson University
Co-organizer, AMS special session *2015*
"Knot theory and Floer-type invariants," AMS Central Spring Sectional Meeting
Co-organizer, 27^{th} Annual Geometry Festival *2012*
Duke University
Co-organizer, 9^{th} Annual Graduate Student Topology and Geometry Conference *2011*
Michigan State University