

Vance T. Blankers

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AREAS OF INTEREST

Moduli Spaces; Combinatorial Algebraic Geometry; Enumerative Geometry; Birational Geometry; Cohomological Field Theories

EDUCATION

Doctorate of Philosophy in Mathematics

Colorado State University (CSU)

Thesis: *Properties of tautological classes and their intersections*

Advisor: Dr. Renzo Cavalieri (renzo@math.colostate.edu)

August 2013 - May 2019

Fort Collins, CO, USA

Bachelor of Arts in Mathematics

Concordia College

Minor in Physics

Credo Honors Scholar, Summa Cum Laude

August 2008 - May 2012

Moorhead, MN, USA

PAPERS

PUBLISHED

V. Blankers, R. Cavalieri. *Witten's conjecture and recursions for κ classes*, European Journal of Mathematics (2020), doi:10.1007/s40879-020-00430-z.

V. Blankers, R. Cavalieri. *Wall-crossings for Hassett descendant potentials*, International Mathematics Research Notices (2020), doi:10.1093/imrn/rnaa077.

V. Blankers. *Hyperelliptic classes are rigid and extremal in genus two*, Épijournal de Géométrie Algébrique, Volume 4 (2020), Article no.2.

V. Blankers, T. Rendfrey, A. Shukert, P. Shipman. *Julia and Mandelbrot sets for dynamics over the hyperbolic numbers*, Fractal Fract (2019), 3(1), 6.

V. Blankers, R. Cavalieri. *Intersections of ω classes in $\overline{\mathcal{M}}_{g,n}$* , Proceedings of Gökova Geometry-Topology Conference (2018).

SUBMITTED

V. Blankers. *Extremality of rational tails strata in $\overline{\mathcal{M}}_{g,n}$* , available at arXiv:2002.12403.

RELEVANT EXPERIENCE

Northeastern University

Zelevinsky-RTG Postdoctoral Fellow

Boston, MA

Fall 2019 – Present

Colorado State University

Graduate Research Assistant

Department of Mathematics Graduate Research Fellowship

Fort Collins, CO

Summer 2017

NSF funding under Dr. Renzo Cavaliere
PRSE¹ Fellowship

Summer 2015, Spring 2017
Summer 2014

ADDITIONAL EXPERIENCE

Northeastern University Boston, MA

Zelevinsky Research Instructor

INSTRUCTOR OF RECORD FOR

MATH 7363 – Introduction to Moduli Spaces Fall 2021

MATH 3175 – Group Theory Fall 2020

DATA SCIENCE 2001 – Programming with Data: Science Practicum Spring 2020

MATH 1365 – Introduction to Mathematical Reasoning Fall 2019

Colorado State University Fort Collins, CO

Graduate Teaching Assistant

INSTRUCTOR OF RECORD FOR

MATH 271, 272 – Applied Math for Chemists Fall 2017 – Spring 2019

MATH 317 – Advanced Calculus of One Variable Summer 2016

MATH 255 – Calculus for Biological Scientists II Spring 2016, Fall 2016

MATH 161 – Calculus for Physical Scientists II Fall 2015, Spring 2019

MATH 180 – One Year Calculus I Fall 2014 – Spring 2015

MATH 155 – Calculus for Biological Scientists I Fall 2013, Spring 2014

ClearEdge3D Denver, CO

Research and Development Intern

Summer 2019

Algorithm Development and Implementation

Cargill, Inc. Wayzata, MN

Statistical Analysis Intern

Summer 2012

Statistical Modeling; Large Data Analysis, Interpretation, and Prediction

CONFERENCE AND SEMINAR TALKS

INVITED

Extremality of rational tails strata in $\overline{\mathcal{M}}_{g,n}$ October 2020
Boston College NT & AG Seminar. Boston, MA

Extremal strata in $\overline{\mathcal{M}}_{g,n}$ May 2020
FRAGMENT² Seminar. Fort Collins, CO

Wall-crossings for descendant potentials on Hassett spaces January 2020
AMS Special Session on Cohomological Field Theories and
Wall Crossing. Denver, CO

Witten's conjecture and recursions for κ classes November 2018

¹University Programs for Research and Scholarly Excellence

²Front Range interested in Algebra, GeoMEtry and Number Theory

Northeastern University GPRT ³ Seminar. Boston, MA	
<i>Descendant potentials for Hassett spaces with diagonal weights</i>	May 2018
Crossing the Walls in Enumerative Geometry conference. Snowbird, UT	
<i>Witten's conjecture for κ-classes</i>	April 2018
AMS Sectional; Special meeting on Moduli Spaces. Portland, OR	
<i>Combinatorial structures in moduli spaces of stable pointed curves</i>	February 2018
SF State Geometry & Topology Seminar. San Francisco, CA	

OTHER TALKS

<i>The triangle of triangles</i>	March 2021
NU Math Club. Boston, MA	
<i>Life after graduate school</i>	September 2020
CSU AMS Alumni Series. Fort Collins, CO	
<i>The tautological ring of the moduli space of curves</i>	September 2019
NU Pick My Brain Seminar. Boston, MA	
<i>The Witten conjecture for κ-classes on the moduli space of curves</i>	January 2019
Joint Math Meetings. Baltimore, MD	
<i>Descendant potentials on Hassett spaces and the Witten conjecture for κ-classes</i>	September 2018
FRAGMENT Seminar. Fort Collins, CO	
<i>Hyperelliptic classes are rigid and extremal in genus two</i>	January 2018
Joint Math Meetings. San Diego, CA	
<i>Hyperelliptic classes are rigid and extremal in genus two (poster)</i>	October 2017
WAGS ⁴ . Los Angeles, CA	
<i>The recursive structure of hyperelliptic loci in moduli spaces of curves</i>	September 2017
FRAGMENT Seminar. Fort Collins, CO	

GREENSLOPES GRADUATE SEMINAR (CSU)

<i>Alice and Bob: a Love Story</i>	February 2019
<i>Career Killers - Fun Problems to Avoid</i>	September 2018
<i>Some Differential Equations in Enumerative Geometry</i>	February 2018
<i>Impossible Things and Where to Find Them</i>	August 2017
<i>Topological Primes</i>	February 2017
<i>Obstructions and Pathologies</i>	October 2016
<i>Fat Points Nowhere and Everywhere: a Brief Introduction to Schemes</i>	February 2016
<i>Graph Theory on the Moduli Space of Curves</i>	September 2015
<i>The Double Ramification Cycle</i>	April 2015
<i>Counting Curves, Stable Maps, and Gromov-Witten Invariants</i>	September 2014

SPLINTER GRADUATE SEMINAR (CSU)

<i>Schemes and You</i>	February 2019
<i>The tautological ring of the moduli space of curves</i>	September 2018

³Geometry, Physics, and Representation Theory

⁴Western Algebraic Geometry Symposium

<i>A differential operator on generating functions of intersection numbers</i>	October 2017
<i>Stick-figure Reproduction (and Graph Multiplication)</i>	March 2017
<i>Hyperelliptic Curve Classes on $\overline{\mathcal{M}}_{g,n}$</i>	October 2016

CATEGORY THEORY LAB (CSU)

<i>Sheaves in category theory and algebraic geometry</i>	October 2018
<i>Moduli problems</i>	July 2018

MATHEMATICAL PHYSICS LAB (CSU)

<i>Introduction to Minkowski space</i>	February 2019
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SPAM⁵ LAB (CSU)

<i>Mandelbrot and Julia sets over the hyperbolic numbers</i>	October 2018
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WORKSHOPS

Riemann Surfaces and Their Moduli Spaces Salt Lake City, UT, USA	February 2020
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Stability, Moduli Spaces and Applications Chicago, IL, USA	December 2019
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Flat Surfaces and Algebraic Curves Oberwolfach, Germany	September 2018
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Crossing the Walls in Enumerative Geometry Snowbird, UT, USA	May 2018
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University of Georgia Summer Workshop in Algebraic Geometry Athens, GA, USA	August 2016
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Summer School in Gromov-Witten Theory Pingree Park, CO, USA	June – July 2014
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MATH OUTREACH/SERVICE

Journal Referee
 Geometry & Topology
 Communications in Mathematical Physics

NSMRP ⁶ REU Co-organizer	Summer 2021
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GPRT Seminar Co-organizer	Fall 2020 – Present
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⁵Solving Problems in Applied Math

⁶Northeastern Summer Math Research Program

Lunch in the Time of COVID Co-organizer	Summer 2020 – Present
CSU Summer REU Leader Dynamics Over the Hyperbolic Numbers	Summer 2018
Splinter Graduate Seminar Organizer	Spring 2018
American Mathematical Society (AMS) CSU Student Chapter Treasurer	Fall 2017 – Present Fall 2017 – Spring 2019
Graduate Student Mentor	Fall 2016 – Spring 2018
Society of Applied and Industrial Mathematics (SIAM) CSU Student Chapter member	Fall 2013 – Spring 2019
Northern Colorado Math Circles (for Middle School Students) Session Facilitator	
<i>Decomposing Compositions</i>	Summer 2018
<i>Eot-Cat-Cit</i>	Summer 2017
<i>It's All Greek to Me: Math in the Ancient World</i>	Summer 2016
<i>Möbius Strips</i>	Summer 2015
CSU Graduate Student Representative	Fall 2016 – Spring 2017
WAGS Co-organizer	Fall 2016
MindMELD ⁷ Co-organizer	Fall 2015 – Spring 2016
FRAGMENT Co-organizer	Fall 2015
Greenslopes Graduate Seminar Co-organizer	Spring 2015

⁷Mindful Mathematics Education, Learning, and Didactics