Vance T. Blankers

(605) 212-8055

v.blankers@northeastern.edu

https://blankersv.com

Current Employment

Associate Director for Research Development and Collaboration — Spring 2022 – Present
College of Science, Northeastern University — Boston, MA

Research Interests

Moduli of Curves; Moduli Spaces; Combinatorial Algebraic Geometry; Birational Geometry; Enumerative Geometry

Education

Doctorate of Philosophy in Mathematics — May 2019
Colorado State University (CSU) — Fort Collins, CO
Thesis: *Properties of tautological classes and their intersections*
Advisor: Dr. Renzo Cavalieri

Bachelor of Arts in Mathematics Minor in Physics — May 2012
Concordia College — Moorhead, MN
Credo Honors Scholar, Summa Cum Laude

Papers

Published

V. Blankers. *Extremality of rational tails boundary strata in $\overline{\mathcal{M}}_{g,n}$*, European Journal of Mathematics (2022), 8, 523–539.

V. Blankers, R. Cavalieri. *Witten's conjecture and recursions for κ classes*, European Journal of Mathematics (2021), 3, 309–339.

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. *Properties of tautological classes and their intersections*, Dissertation, Colorado State University (2019).

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, S. Bozlee. *A classification of Gorenstein compactifications of $\mathcal{M}_{1,n}$ with colliding markings*, available at arXiv:2208.09745.

In Progress

V. Blankers, S. Bozlee. *Intersections of ψ-classes on Gorenstein compactifications of $\mathcal{M}_{0,n}$ and $\mathcal{M}_{1,n}$.*

Teaching

Northeastern University, as Instructor of Record — Boston, MA

MATH 1342 – Calculus 2 for Science and Engineering	Fall 2022
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, as Instructor of Record — Fort Collins, CO

MATH 271 – Applied Math for Chemists I	Fall 2017, Fall 2018
MATH 272 – Applied Math for Chemists II	Spring 2018, 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

Additional Experience

Northeastern University, Zelevinsky RTG Postdoctoral Fellow — Boston, MA

Mathematics Research, Teaching, and Outreach — Fall 2019 – Fall 2021

ClearEdge3D; Research and Development Intern — Denver, CO

Algorithm Development and Implementation — Summer 2019

Cargill, Inc.; Statistical Analysis Intern — Wayzata, MN

Statistical Modeling; Large Data Analysis, Interpretation, and Prediction — Summer 2012

Conference and Seminar Talks

Invited

Panel: Life With a Math Major (moderator) — April 2022
  Western Algebraic Geometry Symposium. Fort Collins, CO

Colliding point compactifications of the moduli space of curves — April 2022
  Tufts Algebra Seminar. Medford, MA

An alphabet of stability conditions — March 2022
  NU Topology Seminar. Boston, MA

Tropicalizing compactifications of $\mathcal{M}_{0,n}$ — March 2022
  AMS Special Session on Moduli in Algebraic and Tropical Geometry. Medford, MA

An alphabet of stability conditions — November 2021
  Valley Geometry Seminar at UMass Amherst. Amherst, MA

Alternative compactifications of the moduli space of curves — September 2021
  Virginia Commonwealth University G&T Seminar. Richmond, VA

Alternative compactifications of the moduli space of curves — September 2021
  Simon Fraser University NTAG Seminar. Burnaby, BC

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

Contributed

Fractals in Minkowski Space	October 2022
NU Math Club. Boston, MA	
Alice and Bob: a Love Story	February 2022
NU Math Club. Boston, MA	
Career Killers - Fun Problems to Avoid	November 2021
NU Math Club. Boston, MA	
Compactifying the moduli space of curves	October 2021
NU Pick My Brain Seminar. Boston, MA	
The triangle of triangles	March 2021
NU Math Club. Boston, MA	
Life after graduate school	September 2020
CSU AMS Alumni Series. Fort Collins, CO	
The tautological ring of the moduli space of curves	September 2019
NU Pick My Brain Seminar. Boston, MA	
The Witten conjecture for κ-classes on the moduli space of curves	January 2019
Joint Math Meetings. Baltimore, MD	
Descendant potentials on Hassett spaces and the Witten conjecture for κ-classes	September 2018
FRAGMENT Seminar. Fort Collins, CO	
Hyperelliptic classes are rigid and extremal in genus two	January 2018
Joint Math Meetings. San Diego, CA	
Hyperelliptic classes are rigid and extremal in genus two (poster)	October 2017
Western Algebraic Geometry Symposium. Los Angeles, CA	
The recursive structure of hyperelliptic loci in moduli spaces of curves	September 2017
FRAGMENT Seminar. Fort Collins, CO	

Greenslopes Graduate Seminar (CSU)

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

Splinter Graduate Seminar (CSU)

Schemes and You	February 2019
The tautological ring of the moduli space of curves	September 2018
A differential operator on generating functions of intersection numbers	October 2017
Stick-figure Reproduction (and Graph Multiplication)	March 2017
Hyperelliptic Curve Classes on $\overline{\mathcal{M}}_{g,n}$	October 2016

Category Theory Lab (CSU)

Sheaves in category theory and algebraic geometry	October 2018
Moduli problems	July 2018

Mathematical Physics Lab (CSU)

Introduction to Minkowski space	February 2019

Solving Problems in Applied Math Lab (CSU)

Mandelbrot and Julia sets over the hyperbolic numbers	October 2018

Workshops
Attended

Summer Graduate School in Tropical Geometry (as TA)	August 2022
Mathematical Sciences Research Institute (MSRI), Moraga, CA	
Riemann Surfaces and Their Moduli Spaces	February 2020
Salt Lake City, UT	
Stability, Moduli Spaces and Applications	December 2019
Chicago, IL	
Flat Surfaces and Algebraic Curves	September 2018
Oberwolfach, Germany	
Crossing the Walls in Enumerative Geometry	May 2018
Snowbird, UT	
University of Georgia Summer Workshop in Algebraic Geometry	August 2016
Athens, GA	
Summer School in Gromov-Witten Theory	June – July 2014
Pingree Park, CO	

Service
Organizing

Pick My Brain Seminar	Fall 2021
NU Summer Math Research Program REU	Summer 2021
Geometry, Physics, and Representation Theory Seminar	Fall 2020 – Fall 2021
Lunch in the Time of COVID Seminar	Summer 2020 – Present
CSU Summer REU	Summer 2018
Dynamics Over the Hyperbolic Numbers	
Splinter Graduate Seminar	Spring 2018
Math Grads Tube Water Polo Manager	Fall 2017 – Spring 2019
Western Algebraic Geometry Symposium	Fall 2016
Mindful Mathematics Education, Learning, and Didactics	Fall 2015 – Spring 2016
FRAGMENT	Fall 2015
Math Grads Soccer Manager	Summer 2015

Greenslopes Graduate Seminar   Spring 2015

Mentoring

Northeastern Graduate Student Mentor   Fall 2021
Graduate Student Mentor   Fall 2016 – Spring 2018
CSU Graduate Student Representative   Fall 2016 – Spring 2017

Refereeing

Referee for Geometry & Topology   Summer 2020 – Present
Referee for Communications in Mathematical Physics   Summer 2020 – Present

Association Participation

American Mathematical Society (AMS)   Fall 2017 – Present
    CSU Student Chapter Founder/Treasurer   Fall 2017 – Spring 2019
Society of Applied and Industrial Mathematics   Fall 2013 – Spring 2019
    Student Chapter Member

Other Outreach

Northern Colorado Math Circles (for Middle School Students)
    Session Facilitator
        Decomposing Compositions   Summer 2018
        Eot-Cat-Cit   Summer 2017
        It's All Greek to Me: Math in the Ancient World   Summer 2016
        Möbius Strips   Summer 2015