

Kristin DeVleming

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ACADEMIC POSITIONS

- 2021 – **Assistant Professor**
 University of Massachusetts, Amherst
- 2018 – 2021 **RTG Postdoctoral Scholar**
 University of California, San Diego
- Spring 2019 **Gamelin Endowed Postdoctoral Fellow**
 MSRI Program on Birational Geometry and Moduli Spaces

EDUCATION

- 2018 **PhD in Mathematics**
 University of Washington, Seattle
 Thesis: *Moduli of surfaces in \mathbb{P}^3*
 Advisor: Sándor Kovács
- 2012 **BS in Mathematics**, minor in Chemistry, *magna cum laude*
 University of Washington, Seattle

RESEARCH INTERESTS

Birational algebraic geometry, classification of algebraic varieties, the minimal model program, singularities of algebraic varieties, K-stability and K-moduli, GIT and KSB/KSBA modular compactifications.

PUBLICATIONS AND PREPRINTS

RESEARCH

- 2023 *K-moduli of Fano family 2.18*, with L. Ji, P. Kennedy-Hunt, and M. Quek, *in preparation*
- 2023 *Classification of low degree unicuspidal rational plane curves*, with N. Singh, *in preparation*
- 2023 *Moduli of boundary polarized Calabi-Yau pairs*, with K. Ascher, D. Bejleri, H. Blum, G. Inchiostro, Y. Liu, and X. Wang, submitted: arxiv.org/abs/2307.06522
- 2022 *Smooth limits of plane curves of prime degree and Markov numbers*, with D. Stapleton, submitted: arxiv.org/abs/2208.10595
- 2021 *K-stability and birational models of moduli of quartic K3 surfaces*, with K. Ascher and Y. Liu, arxiv.org/abs/2108.06848, **Inventiones Mathematicae**

- 2020 *K-moduli of curves on a quadric surface*, with K. Ascher and Y. Liu,
arxiv.org/abs/2006.06816, **Journal of the Institute of Mathematics of Jussieu**
- 2019 *Wall crossing for K-moduli spaces of plane curves*, with K. Ascher and Y. Liu, submitted:
arxiv.org/abs/1909.04576
- 2019 *Maximal Chow constant and cohomologically constant fibrations*, with D. Stapleton:
arxiv.org/abs/1909.01483, **Communications in Contemporary Mathematics**
- 2019 *Moduli of surfaces in \mathbb{P}^3* , arxiv.org/abs/1903.09230, **Compositio Mathematica**
- 2018 *Uniformity for integral points on surfaces, positivity of log cotangent sheaves, and hyperbolicity*, with K. Ascher and A. Turchet: arxiv.org/abs/1807.05946, **International Math Research Notices**

GENERAL INTEREST AND EXPOSITORY WRITING

- 2023 *Moduli of higher dimensional varieties, with exercises*, with D. Bejleri, *in preparation*
- 2023 *Introduction to K-stability and K-moduli*, **Introduction to K-moduli**, with exercises
- 2021 *Advice for the virtual job market*, appearing here in the Early Career section of the **AMS Notices** September Issue
- 2021 *Reflections on the Covid job market*, with R. Palak Bakshi: appearing here **Mathematical Association of America Math Values Blog**
- 2021 *How to have Lunch in the Time of Covid*, with A. Kobin: appearing here in the Early Career section of the **AMS Notices** January Issue
- 2020 *Actionable advice for early career mathematicians on the academic job market*: appearing here in the Early Career section of the **AMS Notices** November Issue

GRANTS AND AWARDS

- 2023 – 2026 **NSF Grant** DMS-2302163
- 2022 **UMass Center for Teaching and Learning Grant**
- 2017 **Steve Mitchell for the Love of Math Fellowship**
- 2014 University of Washington **Excellence in Teaching Award**

FUNDED COLLABORATIONS

- 2019 – 2023 **AIM SQuaRE**: *Compactifying moduli spaces via K-stability and the MMP*, with K. Ascher, Y. Liu, and X. Wang
- 2023 **Collaborate@ICERM**: *Special subvarieties of hypersurfaces*, with D. Bejleri, N. Chen, and D. Stapleton
- 2022 **Collaborate@ICERM**: *Moduli of I-surfaces via wall crossing*, with K. Ascher, Y. Liu, J. Rana, and F. Si

LECTURE SERIES

- May 2023 *Introduction to K-moduli*, Algebraic Geometry and Singularities in Positive and Mixed Characteristic in Ann Arbor (4 lectures)
- August 2022 *K-moduli spaces and K-stability of Fano varieties*, AGNES Summer School on Moduli of Varieties at Brown (4 lectures)

CONFERENCE TALKS

- 2023 KIAS conference on Fano varieties, their Geometry and Moduli in Seoul, Korea, October
Public Opening Lecture (and panelist) at the Fields Medal Symposium in honor of Caucher Birkar in Toronto, Canada, October
Research talk at the Fields Medal Symposium in honor of Caucher Birkar in Toronto, Canada, October
Clay Research Workshop: K-stability and Birational Geometry, Oxford, September
Boston Algebraic Geometry Day at MIT, September
Georgia Algebraic Geometry Symposium, UGA, April
- 2022 PRIMA Congress: Moduli Spaces in Algebraic Geometry in Vancouver, Canada, December
Rationality, Moduli Spaces, and Related Topics in Nagoya, Japan, November
Glimpses of Mathematics, Now and Then: A Celebration of Karen Uhlenbeck's 80th Birthday at IAS, September
Oberwolfach Workshop: Moduli Spaces, Birational Geometry, Derived Aspects, July
JAMI Conference (in honor of Shokurov's birthday) at Johns Hopkins University, May
Joint Math Meetings, April, *virtual*
Simons Centre Conference on Higher Dimensional Geometry, February
- 2021 University of Utah Special Month on Singularities and K-stability, June, *virtual*
AIM Workshop on Moduli Problems Beyond GIT, January, *virtual*
- 2020 Berkeley Undergraduate Number Theory Conference, November, *virtual*
Simons Centre Conference on K-stability, September, *virtual*
- 2019 Birational Geometry and Moduli Spaces at University of Sydney, December
Western Algebraic Geometry Symposium at University of Utah, November
MSRI Connections for Women, January
- 2018 AMS Sectional Meeting at San Francisco State University, October
BIRS Workshop on Moduli Spaces: Birational Geometry and Wall Crossings, October
AMS Sectional Meeting at Portland State University, April

SELECTED SEMINAR AND OTHER INVITED TALKS

- 2023 Smith College Colloquium, November
Brown Algebraic Geometry Seminar, October
University of Massachusetts Valley Geometry Seminar, May
Princeton Algebraic Geometry Seminar, March
Dartmouth Algebra and Number Theory Seminar, March

- 2022 University of Washington Algebra and Algebraic Geometry Seminar, October
 Simon Fraser Number Theory and Algebraic Geometry Seminar, October, *virtual*
 Harvard-MIT Algebraic Geometry Seminar, March
 TWIGS UMass, February, *virtual*
 UCSD AWM Colloquium, February, *virtual*
 Free Math Seminar, February, *virtual*
- 2021 University of Georgia Algebraic Geometry Seminar, October, *virtual*
 Columbia Algebraic Geometry Seminar, October, *virtual*
 Sonoma State University Colloquium, September, *virtual*
 University of Massachusetts Valley Geometry Seminar, September, *virtual*
 University of Nottingham Algebraic Geometry Seminar, July, *virtual*
 University of Massachusetts Amherst Colloquium, March, *virtual*
 University of Kansas Algebraic Geometry Seminar, February, *virtual*
 University of Utah Algebraic Geometry Seminar, January, *virtual*
 University of Utah Colloquium, January, *virtual*
- 2020 Rice University Colloquium, December, *virtual*
 Experimental Talks in Algebraic Geometry, June, *virtual*
 Zoom Algebraic Geometry Seminar, May, *virtual*
 University of Washington Algebraic Geometry Seminar, May, *virtual*
 Northwestern Algebraic Geometry Seminar, February
 UIC Algebraic Geometry Seminar, February
 UCSB Geometry Seminar, February
 UCSD Algebraic Geometry Seminar, January
- 2019 UC Riverside Algebraic Geometry Seminar, October
 UCSD RTG Colloquium, October
 Princeton Algebraic Geometry Seminar, October
 UCLA Algebra Seminar, October
 Stanford Algebraic Geometry Seminar, April
 UC Davis Algebraic Geometry Seminar, April
 Geometry/Topology Seminar at San Francisco State University, March
 MSRI Academic Sponsors Day, March
 MSRI Noetherian Ring Event, February
 MSRI Birational Geometry Seminar, February
- 2018 Washington University in Saint Louis Seminar, April
 2017 Western Washington University Colloquium, November
 2015 Seattle University REU Seminar, July

CONFERENCE LEADERSHIP

ORGANIZATION:

February 2023 Banff International Research Station conference on Explicit Moduli Problems (lead organizer)

- November 2022 AGNES at UMass
 June 2022 Women in Algebraic Geometry special session at AWM Research Symposium (lead organizer)
 Spring 2021 WAGON: Western Algebraic Geometry ONline, *virtual*
 April 2019 Western Algebraic Geometry Symposium, UC Berkeley, Berkeley, CA

PROJECT LEADER:

- August 2023 Stacks Project Workshop mentor

TEACHING

INSTRUCTOR OF RECORD: responsible for lectures, homework, exam-writing, grades.

University of Massachusetts Amherst

- Fall 2023 Graduate Algebra
 Fall 2023 Graduate reading course: Grothendieck ring of varieties (1 student)
 Fall 2023 Undergraduate honors thesis supervisor: classification of finite simple groups (1 student)
 Spring 2023 Graduate Algebraic Geometry
 Spring 2023 Undergraduate independent study: unicuspidal rational plane curves (1 student)
 Spring 2023 Undergraduate Honors Seminar: *What is research in theoretical mathematics?*
 Winter 2022 Undergraduate independent study: classification of finite groups (1 student)
 Fall 2022 Undergraduate independent study: elliptic curve cryptography (1 student)
 Fall 2022 Algebra I: Group Theory
 Spring 2022 Graduate reading course: K3 surfaces (1 student)
 Spring 2022 Algebra I: Group Theory
 Autumn 2021 Linear Algebra

University of California, San Diego

- Winter 2021 Linear Algebra
 Autumn 2020 Calculus II
 Spring 2020 Calculus II
 Winter 2020 Modern Algebra I: Group Theory
 Autumn 2019 Linear Algebra
 Autumn 2018 Integral Calculus

University of Washington

- Spring 2018 Linear Algebra
 Winter 2018 Linear Algebra
 Winter 2017 Linear Algebra
 Spring 2016 Advanced Multivariable Calculus, 2 sections
 Spring 2015 Linear Algebra
 Winter 2015 Linear Algebra

Summer 2014 Calculus with Analytic Geometry, 2 sections
 Spring 2014 Linear Algebra
 Winter 2014 Linear Algebra
 Summer 2013 Calculus with Analytic Geometry

TEACHING ASSISTANT

University of Washington

Fall 2017 Calculus II: Integration
 Fall 2014 Calculus II: Integration
 Fall 2013 Calculus with Analytic Geometry
 Spring 2013 Calculus with Analytic Geometry
 Winter 2013 Calculus with Analytic Geometry
 Fall 2012 Calculus II: Integration

DEPARTMENTAL SERVICE

2023 – S. Rieckehoff-Strong Honors Thesis Supervisor
 2022 – Qualifying Exam writer, UMass Mathematics
 2021 – UMass AWM (Association of Women in Math) Faculty Advisor
 2023 – UMass Mathematics Onboarding Committee
 2023 – UMass Mathematics Bylaws Committee
 2023 – UMass Mathematics Postdoc Search Committee
 August 2022 Y. Yang Qualifying Exam Committee
 April 2022 F. Dul Thesis Defense Committee
 2021 – 2023 UMass Mathematics Teaching Committee
 2021 – 2023 UMass Mathematics Undergraduate Program Committee
 2020 – 2021 UC San Diego Mathematics Website Redesign Committee
 2020 – 2021 UC San Diego Association of Women in Mathematics Colloquium organizer
 2019 – 2021 UC San Diego Association of Women in Mathematics member and mentor
 2014 – 2018 University of Washington Math Circles Committee member
 Fall 2017 University of Washington Teaching Assistant mentor
 2015 – 2016 University of Washington Undergraduate Program Committee member
 2015 – 2016 University of Washington Lead Teaching Assistant
Trained and mentored all incoming math and applied math graduate students in teaching
 Fall 2014 University of Washington Teaching Assistant mentor

PROFESSIONAL EXPERIENCE

Winter 2010, Summer 2010, Summer 2011: Central Intelligence Agency Student Trainee
 Executed and automated bit-level signal processing and analysis. Developed and deployed innovative devices. Travelled to domestic and international sites.

COMMUNITY OUTREACH

- 2021 – UMass AWM (Association of Women in Math) Faculty Advisor
- March 2023 Speaker, UMass Math Club
Math we don't know
- October 2022 Speaker, UMass Math Club
Solving problems by connecting the dots
- May 2022 Speaker, UMass Math Festival
Stable matching problems
- February 2022 Speaker, UMass Math Club
What is a surface?
- 2020 – 2023 Organizer, *Lunch in the Time of Covid*, with A. Kobin
A bi-weekly meeting focusing on issues affecting early career mathematicians
- July 2020 Special Lecturer, Summer Institute for Mathematics at the University of Washington (SIMUW)
Structures on Surfaces, virtual
- April 2020 Speaker, UW Math Hour
Reflections, Rotations, and Rearrangements, virtual
- July 2019 Instructor, SIMUW
A Guide to Group Theory: a two-week, hands-on introduction to group theory for high school students
- April 2019 Instructor, Berkeley Math Circle
Taught two sessions on topology and group theory
- March 2019 Plenary Speaker, University of Washington Math Day
Adventures in Topology
- 2013 – 2018 University of Washington Math Circle, First Year Instructor
Facilitated, lectured to, and created curriculum for advanced middle school students. Educated students in the art of problem solving and proofs
- 2016 – 2018 Mentor, Washington Experimental Math Laboratory
Mentored and assisted undergraduate math researchers studying prime gaps
- 2015 – 2018 Assistant Director for Residential Life, Summer Institute for Mathematics at the University of Washington (SIMUW)
Coordinated daily activities for a high school summer math program.
- July 2018 Special Lecturer, SIMUW
Donuts and Oranges: a Balanced Mathematical Breakfast
- March 2018 Speaker, University of Washington Math Day
Topological Trouble
- August 2017 Special Lecturer, SIMUW
Donuts and Oranges: a Balanced Mathematical Breakfast
- March 2017 Speaker, University of Washington Math Day
To Infinity, and Beyond
- July 2016 Special Lecturer, SIMUW
Tic-Tac-Toe
- Summer 2016 Math Instructor, Women in Science and Engineering (WiSE) Summer Bridge Program
Taught incoming pre-engineering students precalculus and calculus skills needed to be successful in UW math classes

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- March 2016 Speaker, University of Washington Math Day
To Infinity, and Beyond
- 2013 – 2015 Activities Coordinator, SIMUW
- Summer 2015 Math Instructor, Women in Science and Engineering (WiSE) Summer Bridge Program
- March 2015 Speaker, University of Washington Math Day
Sphere Packing, and Why Diamonds are Worth More than Pencil Lead
- March 2015 Speaker, Seattle Expanding Your Horizons
All About Pi
- July 2014 Special Lecturer, SIMUW
Chemical Applications of Group Theory
- March 2014 Speaker, University of Washington Math Day
FoldIt: Using a Computer Game to Solve Biology's Hardest Problem
- March 2015 Speaker, Seattle Expanding Your Horizons
Dots and Lines: Why You Should Care about Graphs