Dagan Karp

www.math.hmc.edu/~dk

EDUCATION:

University of British Columbia, Vancouver, British Columbia.
Received Ph.D. in Mathematics under Jim Bryan in May, 2005.

Tulane University, New Orleans, Louisiana.
Received M.Sc. in Mathematics in 2001 and B.Sc. in Mathematics and Physics in 1999.

EMPLOYMENT:

Harvey Mudd College, Claremont, California.
Associate Professor of Mathematics. August 2014 – Present.
Associate Dean for Diversity. August 2016 – July 2019.
Associate Chair, Department of Mathematics. August 2015 – July 2017.
Assistant Professor of Mathematics. August 2008 – July 2014.

University of California, Berkeley.
Visiting Assistant Professor. July 2006 – July 2008.
NSERC Postdoctoral Fellow. June 2005 – June 2006.

VISITING POSITIONS:

Yale University, New Haven, Connecticut.
Visiting Assistant Professor. Fall 2014.

Institute for Pure and Applied Mathematics, Los Angeles, California.
Core Researcher. March – June 2003.

SELECT ADDITIONAL POSITIONS:

Mathematical Association of America, Southern California-Nevada Section.
Chair. 2020 – 2021.
Chair-Elect. 2019 – 2020.
American Mathematical Society, Committee on Professional Ethics.
Chair. 2019-2021.
Park City Mathematics Institute, Diversity Committee.
Chair. 2015 – Present.
Western Algebraic Geometry Symposium, Diversity Committee.
Founding Chair, 2016 – 2019.
Mathematical Sciences Research Institute, Human Resources Advisory Committee. Member, 2012 – 2015.
SACNAS, National Mathematics Task Force.
Co-Chair. 2011 – 2015.

BOOKS:

[1] A Conversation on Professional Norms. Editors: Mathilde Gerbelli-Gauthier, Pamela E. Harris, Mike Hill, Dagan Karp, Emily Riehl. Submitted.

PAPERS:

[11] Standards Based Grading and Equity in Postsecondary Mathematics Education. With Jenny Lee and Laura Palucki Blake. Preprint.

[10] Fiber Bundles and Intersectional Feminism. In *A Conversation on Professional Norms*. Editors: Mathilde Gerbelli-Gauthier, Pamela E. Harris, Mike Hill, Dagan Karp, Emily Riehl. Submitted. `http://math.hmc.edu/~dk/papers/fbif.pdf`

[9] Chow Rings of Heavy/Light Hassett Spaces via Tropical Geometry. With Siddarth Kannan and Shiyue Li. *Journal of Combinatorial Theory, Series A* 178 (2021) 105348

[8] El Grado de Brouwer y el Teorema de Riemann-Roch. Memorias de los Grandes Maestros de la Matemática Colombiana, Vol. 2, 253-259. With Alfonso Castro.

[7] Cremona symmetry in Gromov-Witten theory. With Amin Gholampour and Sam Payne. *Pro Mathematica* Volume 29, Num. 57 (2016) 129-149.

[6] Gromov-Witten Theory of $\mathbb{P}^1 \times \mathbb{P}^1 \times \mathbb{P}^1$. With Dhruv Ranganathan. *Journal of Pure and Applied Algebra*, Volume 220, Issue 8. (2016) 3000-3009.

[5] Toric symmetry of $\mathbb{CP}^3$. With Dhruv Ranganathan, Paul Riggins and Ursula Whitcher. *Adv. Theor. Math. Phys.* **10** (2012) 1291-1314.

[4] On a family of K3 surfaces with $\mathcal{S}_4$ symmetry. With Jacob Lewis, Daniel Moore, Dmitri Skjorshammer and Ursula Whitcher. *Arithmetic and Geometry of K3 Surfaces and Calabi-Yau Threefolds* , Fields Institute Communications, Volume 67. R. Laza, M. Schutt, and N.Yui (Eds.). 2013.

[3] The local Gromov-Witten invariants of configurations of rational curves. With Chiu-Chu Melissa Liu and Marcos Mariño. *Geometry & Topology*. 10 (2006) 115-168.

[2] The closed topological vertex via the Cremona transform. With Jim Bryan. *Journal of Algebraic Geometry*. 14(3):529-542, 2005.

[1] An extension of a criterion for unimodality. With Jenny Alvarez, Miguel Amadis, George Boros, Victor H. Moll, Leobardo Rosales. *Electronic J. of Combinatorics*. 2001. 8#R30.pg:1-5

ADDITIONAL WRITING:

[10] Toward Anti-Oppressive Mentorship in Mathematics. *AMS eMentoring Network Blog*. 2017.

[9] Back to School: Universal Mentorship. *AMS eMentoring Network Blog*. 2015.

[8] Cultural Obstructions in Mathematics. *AMS eMentoring Network Blog*. 2015.

[7] Mathematics at SACNAS. *AMS eMentoring Network Blog*. 2014.

[6] Welcome to (Graduate) School. *AMS eMentoring Network Blog*. 2014.

[5] Finals Season: The Art of Exam Crushing. *AMS eMentoring Network Blog*. 2014.

[4] Dealling with Illness and Loss Early in One's Mathematical Career. *AMS eMentoring Network Blog*. 2013.

[3] Linear Algebra and Pedagogy: Academic Fairness and Critical Theory. *AMS eMentoring Network Blog*. 2013.

[2] The AfterMath Conference: Lessons Learned from a Regional Conference. *AMS eMentoring Network Blog*. 2013.

[1] More on Underrepresentation. *Notices of the AMS*. Letters to the Editor. Volume 52, Number 3. 2005.

GRANTS:

NSF 1743331, co-PI. "Enhancing the Mathematical Sciences Component of the 2017 SACNAS National Conference." $49,991.
NSF 1643235, co-PI. "Enhancing the Mathematical Sciences Component of the 2016 SACNAS National Conference." $49,954.
NSA, co-PI. "Enhancement of the Mathematics and Statistics Component of the 2015-2016 SACNAS Conferences." $45,000.
NSF 1406636. co-PI. "Undergraduate summer school in supersymmetry". Spring 2014. $14,905
NSA Co-13-SACNAS-0913-2-121005, co-PI. "Enhancement of the Mathematics and Statistics Component of the 2013-2014 SACNAS Conferences." $100,000.

NSA H98230-11-1-0219, PI. "Enhancement of the Mathematics and Statistics Component of the 2011-2012 SACNAS Conferences." $200,000.
MAA Tensor-SUMMA, co-PI. 2010-2011. $6,000.
NSF DMS-0936047, PI. "Categorical Methods in Topology and Quantum Geometry Conference." $23,850.
MAA Tensor-SUMMA, co-PI. 2009-2010. $6,000.
NSF DMS-0752978, PI. "Low Dimensional Topology and Quantum Geometry Conference." $22,455.
NSF DMS-0640282, PI. "Conference on Geometry and Theoretical Physics." $15,270.

AWARDS:

Recognition of Outstanding Teaching, UC Berkeley, Dept. of Mathematics 2007.
Graduate Teaching Award. Department of Mathematics, U. of British Columbia. 2004.
University Graduate Teaching Award Nomination. Department of Mathematics, University of British Columbia. 2003–2004.
Teaching Assistant of the Year. Tulane University, Dept. of Mathematics. 2000–2001.

FELLOWSHIPS:

NSERC Postdoctoral Fellowship. 2005–2006.
University Graduate Fellowship. University of British Columbia. 2002–2003.
Graduate Fellowship. Tulane University. 1999–2001.
NSF Research Experience for Undergraduates. Tulane University. 1998.

SERVICE:

Conference and Seminar Organization.

- Co-organizer, of the Fall 2020 Western Algebraic Geometry Symposium. With Edray Goins.
- Co-organizer of *Computational Topology and Topological Data Analysis*, a scientific symposium and component of the 2015 SACNAS⋆ National Conference. October 2015.
- Co-Organizer of *Undergraduate Summer School in Supersymmetry*, with Ursula Whitcher and Charles Doran. Spring 2014. `https://people.uwec.edu/whitchua/supersymmetry/`
- Co-organizer of *Combinatorial Algebraic Geometry*, a scientific symposium and component of the 2014 SACNAS National Conference. October 2014.
- Co-organizer of *Low Dimensional Topology*, a scientific symposium and component of the 2013 SACNAS National Conference. October 2013.
- Co-organizer of *The AfterMath Conference: Preparing for Careers in the Mathematical Sciences*. A Pacific Alliance Conference. February 2013.
  `http://www.math.hmc.edu/AfterMath/`
- Organizer of WAGS Spring 2013 at Mudd. This was the first time WAGS was hosted by an undergraduate institution. `https://www.math.hmc.edu/wags/`
- Co-organizer of *A Mathematical Invitation to Knot Theory*, a scientific symposium and component of the 2012 SACNAS National Conference. October 2012.
- Co-organizer of *Interdisciplinary Algebra: Representation Theory, Number Theory and Algebraic Combinatorics*, a scientific symposium and component of the 2011 SACNAS National Conference. October 2011.
- Co-organizer of the 2011 HMC Mathematics Conference on *Broadening Participation in the Mathematical Sciences*, February 2011.
  `http://www.math.hmc.edu/conferences/2011/`
- Co-organizer of WAGS* Fall 2010. University of Arizona.
- Co-organizer of *Hidden Structures and Mirror Symmetries*, a scientific symposium and component of the SACNAS National Conference, October 2010.

- Co-organizer of WAGS Spring 2010. University of British Columbia.
- Co-organizer of WAGS Fall 2009. UCLA/IPAM.
  http://www.math.hmc.edu/~dk/wags/2009/
- Founder and Organizer of SUMS, the Seminar on Underrepresentation and the Mathematical Sciences. 2008-Present.
  http://www.math.hmc.edu/~dk/sums
- Co-organizer of *Categorical Methods in Topology and Quantum Geometry*, a scientific symposium and component of the SACNAS National Conference, October, 2009.
  http://www.math.hmc.edu/~dk/sacnas/2009/
- Co-organizer of WAGS Spring 2006. Berkeley.
  http://math.berkeley.edu/wags
- Co-organizer of the Berkeley-Stanford Algebraic Geometry Colloquium. 2005–2008.
  http://math.stanford.edu/ag/joint/
- Co-organizer of *Low Dimensional Topology and Quantum Geometry*, a scientific symposium and component of the SACNAS National Conference, October 2007.
  http://www.math.berkeley.edu/~dkarp/sacnas/2007.html
- Organizer of *Geometry and Theoretical Physics*, a scientific symposium and component of the SACNAS National Conference. October 2006.
  http://math.berkeley.edu/~dkarp/sacnas/2006.html

*WAGS is the Western Algebraic Geometry Seminar, and was the largest regularly held algebraic geometry seminar in the United States. http://www.wagsymposium.org
⋆SACNAS is regularly the largest gathering of minority scientists held in the US.

Editorial Positions:

- Co-Founding Editor, with Ricardo Cortez and Pamela E. Harris, of the eMentoring Mathematics Network. http://blogs.ams.org/mathmentoringnetwork/

HMC SERVICE:

Standing Committees

- Assessment and Accreditation Committee. 2020-2021.
- Academic Affairs Committee. 2019-2021.
- Chair, Teaching and Learning Committee. 2016-2017.
- Teaching and Learning Committee. 2015-2016.
- Chair, Curriculum Committee. 2011-2012, 2012-2013.
- Academic Affairs Committee. 2010-2011.

Special Committees

- Faculty Co-chair, Strategic Plan for Diversity, Equity and Inclusion Steering Committee. 2018-2020.
- Core Incubator Committee. 2019-2020.
- Claremont Consortium Diversity Working Group of Associate Deans. 2016-2019.
- Hixon-Riggs Committee. 2013-2014.
- Faculty Advisory Committee for the Teaching and Learning Building. 2011-2012.

- Strategic Vision Curriculum Implementation Committee (SVCIC). 2009-2010.

HMC Equity, Diversity, and Inclusion

- Associate Dean for Diversity. 2016-2019.
- Faculty Sponsor of the Claremont SACNAS Chapter and corresponding student organization.
- Multicultural Ally Program (MAP) Faculty Representative. 2009-2010.
- Summer Institute Lecturer
- Ongoing mentor of Summer Institute Students
- Ongoing faculty mentor in the HMC Mentorship Program
- Co-organizer of conference held at HMC on Broadening Participation in the Mathematical Sciences.
- Organizer of SUMS, the Seminar on Underrepresentation and the Mathematical Sciences.

Departmental Committees

- Placement Coordinator. 2010-2013. 2016-2021.
- Curriculum Committee. 2008-2010.

Postdoctoral Scholars
Supervised the research of Postdoctoral Fellow Ursula Whitcher. Her research is in algebraic geometry, K3 surfaces and mirror symmetry. Dr. Whitcher is now Assistant Professor of Mathematics at the University of Wisconsin – Eau Claire.

Undergraduate Supervision

- Jawahar Madan. On Tropical ψ classes and $\overline{M}_{1,1}^{\text{trop}}$. Graduating in 2021.
- Feiyang Lin. (co-Advisor with Gregg Musiker) Cluster Algebras and Quiver Representations. Graduating in 2021.
- Ziyang Zhang. Generalized Graph Jacobians for Adinkras. Graduating in December, 2020.
- Lily Friedberg. Reflections on Critical Math Education in the College Classroom: Critical Pedagogy and Modular Approaches. Graduated in 2020.
- Jenny Lee. On Self-Regulation in College Level Mathematics Classes. Graduated in 2019 to work for Facebook.
- Siddarth Kannan. Chow rings of heavy/light Hassett spaces via tropical geometry. Graduated in 2018 to the mathematics PhD program at Brown.
- Christopher Hoyt. On the Landscape of Tropical Polynomials. Graduated in 2018 to the ICME PhD program at Stanford.
- Shiyue Li. Tropical Derivation of Cohomology Ring of Heavy/Light Hassett Spaces. Graduated in 2017 to the mathematics PhD program at Yale.
- Aaron Bagheri. Classifying the Jacobian Groups of Adinkras. Graduated in 2017 to the mathematics PhD program at UCSB.
- Max Hlavacek. Random Tropical Curves. Graduated in 2017 to the mathematics PhD program at UC Berkeley.
- Madeleine Weinstein. Adinkras and Arithmetical Graphs. Awarded an **NSF Graduate Research Fellowship** and graduated in 2016 to the mathematics PhD program at UC Berkeley.

- Matthew Lin. Graph Cohomology. Graduated in 2016 to the mathematics PhD program at UC Davis.
- Jeremy Usatine. Arithmetical Graphs, Riemann-Roch Structure for Lattices, and the Frobenius Number Problem. Awarded an **NSF Graduate Research Fellowship** and graduated in 2014 to the mathematics PhD program at Yale.
- Olivia Beckwith. Toric Symmetry of $\mathbb{P}^1 \times \mathbb{P}^2$. Graduated in 2013 to the PhD program at Emory with Ken Ono.
- Kevin O'Neill. Lines in Tropical Quadrics. Graduated in 2013 to the PhD program at UC Berkeley.
- Zach Gaslowitz. Chip Firing Games and RiemannRoch Properties for Directed Graphs. Graduated in 2013 to the PhD program at Vanderbilt.
- Dhruv Ranganathan. Gromov–Witten theory of $\mathbb{P}^1 \times \mathbb{P}^1 \times \mathbb{P}^1$. Graduated in 2012 to PhD program at Yale.
- Laura Passarelli. Algebraic Curves: A Guide to William Fulton's Text. Graduated in 2012 to be an instructor at Phillips Exeter Academy.
- Max Kutler. Group actions and invariant divisors on tropical curves. Graduated in 2011 to the PhD program at U. Oregon.
- Kwang Ketcham. Group frames and partially ranked data. In 2010, graduated to the PhD program at U. Oregon.
- Rachel Karpman. Noether complexity of monomial ideals. In 2010, awarded an **NSF Graduate Research Fellowship**, and joined the PhD program at U. Michigan.

Equity, Diversity, and Inclusion:

- Chair, PCMI Diversity Subcommittee. The subcommittee of PCMI's steering committee working to broaden participation at the Institute. (2015–)
- Member, USTARS Advisory Board. The Undergraduate Students in Topology and Algebra Research Symposium works to broaden participation in these areas of acute gender inequity and underrepresentation. (2015–)
- Member, MSRI's Human Resources Advisory Committee. Part of MSRI's governance, HRAC works to broaden MSRI's participant pool. 2012-2015.
- Member, SACNAS National Mathematics Task Force. SACNAS is the Society for Advancement of Chicanos and Native Americans in Science and is the nation's preeminent organization working against underrepresentation and gender inequities broadly speaking across the sciences.
- Co-founder and Editor of the *eMentoring Network Blog*, hosted by the AMS, working to broaden participation in mathematics through mentorship.
  `http://blogs.ams.org/mathmentoringnetwork/`
- Founding Chair, WAGS Diversity Committee, working to broaden participation in algebraic geometry. 2016-2019.
- Ongoing organizer of Scientific Symposia at SACNAS.
- Securer of several NSA and NSF grants supporting SACNAS and its annual National Conference.
- Founder and organizer of SUMS, the Seminar on Underrepresentation and the Mathematical Sciences. (2009-2011)

- Undergraduate Mentor and Member of the National Alliance for Doctoral Studies in the Mathematical Sciences.
- Member, Algebra Project The AP views mathematics as a civil right, and works to raise the floor of mathematics by increasing the minimum amount of mathematics encountered in K12 education. (2008-2009)
- Faculty Representative to the Harvey Mudd College Multicultural Ally Program. (2009-2010)
- Committee member for the establishment of the MSRI-Oakland Math Circle. The goal of this Circle is to build a bridge between the mathematicians affiliated with MSRI and Berkeley, and the students of Oakland, California. (2006-2007) at the University of British Columbia. (2004)
- Seminar associate at SIMU, the Summer Institute in Mathematics for Undergraduates. This NSF REU program was specifically designed for Chicana(o)/Latina(o) and Native Americans to foster and encourage academic development. Winner of a *Programs That Make a Difference* award, 2006, by the American Mathematical Society. (2000)
- Tutored inner-city New Orleans youths in Mathematics through the Tulane University Community Outreach Work Study program. (1997-1998)

CONTACT:

Department of Mathematics
Harvey Mudd College
Claremont, CA 91711

T: (909) 607-1264
F: (909) 621-8366
dagan.karp.at.hmc.edu
www.math.hmc.edu/~dk