

Laura Starkston

PERSONAL INFORMATION

University of California, Davis
Mathematics Department
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Citizenship: USA
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EMPLOYMENT

Associate Professor, University of California, Davis, Mathematics **July 2022–present**
Assistant Professor, University of California, Davis, Mathematics **July 2018–June 2022**
NSF Postdoctoral Fellow, Stanford University, Mathematics Department **2015–2018**

RESEARCH

Symplectic topology, contact topology, smooth 4-manifolds, singularities

EDUCATION

University of Texas at Austin

Ph.D. in Mathematics, May 2015

- Dissertation Title: Classifications and Applications of symplectic fillings of Seifert fibered spaces over S^2
- Advisor: Robert Gompf

Harvard University

A.B. in Mathematics, magna cum laude, May 2010

- Undergraduate thesis: Contact structures and classifications of Legendrian and transverse knots

PUBLICATIONS AND PREPRINTS

Martón Beke, Olga Plamenevskaya, and Laura Starkston An Unexpected Rational Blow-down. arXiv:2510.00115 [math.GT]

Olga Plamenevskaya and Laura Starkston Sandwiched singularities and nearly Lefschetz fibrations. arXiv:2507.21293 [math.GT]

Aleksandra Marinković and Laura Starkston. Contact 3-manifolds that admit a non-free toric action. *Bulletin of the LMS.* 58(2026) no. 1, e70259.

Aleksandra Marinković, Jo Nelson, Ana Rechtman, Laura Starkston, Shira Tanny, and Luya Wang. Properties of contact toric structures and concave boundaries of linear plumbings. To appear in *Transactions of the AMS.*

Contributions to: K3 - A New Problem List in-Low Dimensional Topology. *AMS Mathematical Surveys and Monographs Series*, Volume 295, 2026.

- Exact versus Weinstein symplectic fillings
- Uniqueness of Weinstein structures
- Donaldson divisors
- Contact type hypersurfaces
- Classical symplectic isotopy problem
- Singular symplectic isotopy problem

Nickolas Castro, Gabriel Islambouli, Jie Min, Sumeyra Sakalli, Laura Starkston and Angela Wu. The contact cut graph and a Weinstein \mathcal{L} -invariant. *Transactions of the LMS*. 12(2025) no. 1, e70020.

Marco Golla and Laura Starkston Rational cuspidal curves and symplectic fillings. *J. Symplectic Geometry*. 22(2024), no. 5, 1109-1178.

Gabriel Islambouli and Laura Starkston Multisections with divides and Weinstein 4-manifolds. *J. Symplectic Geometry*. 22(2024), no. 2, 223-266.

Bahar Acu, Orsola Capovilla-Searle, Agnès Gadbled, Aleksandra Marinković, Emmy Murphy, Laura Starkston, and Angela Wu. Weinstein handlebodies for complements of smoothed toric divisors. *Memoirs of the AMS*. 309 (2025), no. 1561.

Olga Plamenevskaya and Laura Starkston Unexpected Stein fillings, rational surface singularities, and plane curve arrangements. *Geometry & Topology*. 27(2023), no.3, 1083–1202.

Marco Golla and Laura Starkston. The symplectic isotopy problem for rational cuspidal curves. *Compositio Mathematica*. 158 (2022), no. 7, 1595-1682.

Peter Lambert-Cole, Jeffrey Meier, and Laura Starkston. Symplectic 4-manifolds admit Weinstein trisections. *Journal of Topology*, 14 (2021) no. 2, 641-673.

Bahar Acu, Orsola Capovilla-Searle, Agnès Gadbled, Aleksandra Marinković, Emmy Murphy, Laura Starkston, and Angela Wu. An introduction to Weinstein handlebodies for complements of smoothed toric divisors. *Research directions in symplectic and contact geometry and topology*, 217-243, Assoc. Women Math. Ser., 27, Springer, Cham, 2021.

Laura Starkston. Arboreal singularities in Weinstein skeleta. *Selecta Math. (N.S.)*, 24 (2018), no. 5, 4105-4140.

Laura Starkston. A new approach to the symplectic isotopy problem. *J. Sympl. Geom.* 18 (2020), no. 3, 939-960.

Daniel Ruberman and Laura Starkston. Topological realizations of line arrangements. *Int. Math. Res. Not. (IMRN)*. 2019, no. 8, 2295-2331.

Laura Starkston. Comparing star surgery to rational blow-down. *J. Gökova Geom. Topol.*, 10 (2016), 60-79.

Çağrı Karakurt and Laura Starkston. Surgery along star shaped plumbings and exotic smooth structures on 4-manifolds. *Algebraic and Geometric Topology*, 16(3): 1585–1635, 2016.

Laura Starkston. Symplectic fillings of Seifert fibered spaces. *Transactions of the American Mathematical Society*, 367(8): 5971–6016, 2014.

Allison Moore and Laura Starkston. Genus two mutant knots with the same dimension in knot Floer and Khovanov homologies. arxiv:1204.2524. *Algebraic and Geometric Topology*, 15(1), 43–63, 2015.

Laura Starkston. The Khovanov homology of $(p, -p, q)$ pretzel knots. *Journal of Knot Theory and its Ramifications*, 21(5):1250056, 14, 2012.

Colin Adams, Rachel Hudson, Ralph Morrison, William George, Laura Starkston,

Samuel Taylor, and Olga Turanova. The spiral index of knots. *Mathematical Proceedings of the Cambridge Philosophical Society*, 149(2):297–315, 2010.

GRANTS AND
FELLOWSHIPS

GAANN Award **2024-2027**
Mathematics Graduate Assistance in Areas of National Need at the University of California,
Davis
Department of Education
\$336,198 external funding
Role: Project director

NSF Conference Grant **2023**
Trisections Workshop: Connections with Symplectic Topology
DMS 2308782
\$30,000

Alfred P. Sloan Fellowship **2021-2025**
\$75,000

NSF CAREER Grant **July 2021–June 2027**
CAREER: Symplectic 4-manifolds and Singular Symplectic Surfaces
DMS 2042345
\$600,856

Hellman Fellowship **2020**

NSF Grant **July 2019–June 2022**
Symplectic Surfaces, Lefschetz Fibrations, and Arboreal Skeleta.
DMS 1904074
\$203,855

NSF Mathematical Sciences Postdoctoral Research Fellowship **2015–2018**
DMS 1501728
\$150,000

National Science Foundation Graduate Research Fellowship **2010-2015**

GRADUATE AND
UNDERGRADUATE
STUDENTS

Shanon Rubin (PhD 2025)

Sari Ogami (PhD 2026)

Daniela Cortes Rodriguez (PhD advisee, in progress)

Cindy Zhang (PhD advisee, in progress)

Victoria Quijano (Undergraduate Thesis 2021)

Sari Ogami (Undergraduate Thesis 2020)

SERVICE AND
OUTREACH

Departmental Service

Graduate Admissions Committee (2026)

Graduate program Vice Chair (2023-2025)

Undergraduate Program Committee (2022-2023)

Graduate Program Committee (2020-2021, 2021-2022)

Departmental Relations Committee (2020-2021)

Faculty Supervisor for Directed Reading Program at UC Davis (2021-present)

Reading program pairing math major undergraduate mentees with PhD candidate mentors to study a selected topic together.

Events and Displays Committee (2019-2020)

Geometry Topology Seminar Organizer (2018-2019, 2019-2020, 2022-2023)

University Service

College of L&S Community and Inclusive Excellence Committee (2025-2027)

Hellman Fellowship review panel (2023, 2025)

Steering committee of MURPPS (2020-2021)

Aggie Success Seminar Facilitator—new student orientation (2020)

External Service:

Organizing:

Trisectors Workshop 2024: Connections with Knotted Surfaces, Lincoln, NE (June 2024)

Trisectors Workshop 2023: Connections with Symplectic Topology, UC Davis (June 2023)

Interactions between Symplectic and Holomorphic Convexity in 4 Dimensions, Banff International Research Station, (April 2023)

Complex and symplectic curve configurations, Nantes, France, (December 2022)

Lead organizer of MSRI summer school *Gauge Theory in Geometry and Topology*, (July 2021).

Complex and Symplectic Curve Configurations, Institut Mittag-Leffler (July 2020—cancelled due to COVID-19 pandemic)

The topology and geometry of low-dimensional manifolds: a celebration of the mathematics of Bob Gompf (July 2018)

AIM Workshop: Symplectic 4-manifolds through branched covering (May 2018)

AIM Workshop: Arborealization of singularities of Lagrangian skeleta (March 2018)

Northern California Symplectic Geometry Seminar

Graduate Student Topology and Geometry Conference (April 2014)

Panels:

MSRI/SLMath Summer Research in Mathematics Selection Committee, 2022, 2023, 2024

NSF Panelist Winter 2017, Winter 2020, Fall 2020

Referee and Quick Opinions:

(* indicates reviewing during 2024-2026)

- *Algebraic & Geometric Topology
- Annals of Mathematics
- Arnold Mathematical Journal
- *Boletín de la Sociedad Matemática Mexicana
- Bulletin of the American Mathematical Society
- *Bulletin of the London Mathematical Society
- Communications in Analysis and Geometry
- *Compositio Mathematicae
- Duke Mathematical Journal
- International Mathematics Research Notices
- Inventiones Mathematicae
- Geometriae Dedicata
- *Geometry & Topology
- Journal of Differential Geometry
- *Journal of the London Mathematical Society
- *Journal of Geometry and Physics
- *Journal of Symplectic Geometry
- Journal of Topology
- Mathematical Research Letters
- Mathematische Nachrichten
- Notices of the AMS
- *Revue Roumaine de Mathématiques Pures et Appliquées
- *Selecta Mathematica
- *Transactions of the American Mathematical Society
- *Winter Braids Lecture Notes Proceedings

Mathematical Reviews contributor

Mentoring:

Leader for research group in the Women in Geometry program at the Banff International Research Station, September 2023

Leader for a research group in the Women in Symplectic and Contact Geometry and Topology workshop, July 22-26, 2019

Mentor for Kylerec 2019 Workshop on Sheafy Symplectic Topology.

Mentor for Kylerec 2017 Workshop on symplectic fillings of contact manifolds. (Truckee, CA)
Intensive five day graduate student workshop (Talbot style)
Worked with student organizers to design the program
Supported participant speakers during preparations and talks

Outreach Talks:

AWM Faculty Panelist, November 2024

UC Davis Math Club and AWM lecture series, February 2023

inteGIRLS Bay Area Chapter, Spring Math Competition speaker

UC Davis Math Club, November 2018

SUMaC (Stanford high school summer math camp), Summer 2017

SURIM (Stanford undergraduate summer research), Summer 2016

UT Austin Math Club (UT Austin undergraduates)

Math Circle interactive lecture (Austin area middle and high school students)

INVITED TALKS	PCMI Graduate Summer School: Knotted Surfaces in 4-manifolds Mini-course on symplectic surfaces in 4-manifolds Park City, Utah	July 12-18, 2026
	Geometry and Topology in Low Dimensions: Lasting Trends and Emerging Directions Budapest, Hungary	June 22-26, 2026
	2025 Georgia International Topology Conference University of Georgia, Athens	May 19-30, 2025
	AMS Special Session on Knotted Surfaces and 4-manifolds AMS Western Sectional Meeting Cal Poly, San Luis Obispo	May 3-4, 2025
	AMS Special Session on Geometry and Dynamics in Symplectic and Contact Manifolds AMS Western Sectional Meeting Cal Poly, San Luis Obispo	May 3-4, 2025
	Low-dimensional topology days University of Nantes, France Invited mini-course speaker, 3 lectures on braided surfaces	August 26-30, 2024
	Workshop on Symplectic Topology University of Belgrade, Serbia	August 19-23, 2024
	Combinatorial and gauge theoretical methods in low dimensional-topology and geometry CRM De Giorgi (Pisa, Italy)	June 3-7, 2024
	Georgia Topology Conference	May 21, 2024
	Colloquium: Rice University	March 22, 2024
	MIT Symplectic Seminar	February 22, 2024
	2024 Geometry and Topology Workshop at UCLA	January 4, 2024
	Joint Mathematics Meetings San Francisco	January 3, 2024
	AIM Workshop: K3 Kirby problem list	Oct 30-Nov 3, 2023

Caltech	
Colloquium: University of Nevada, Reno	September 14, 2023
2023 Morningside Center of Mathematics Geometry Summer School Beijing, China	September 7, 2023
Princeton RTG Summer School Conference	July 19-21, 2023
Fico González-Acuña Low Dimensional Topology Seminar UNAM, Mexico	April 27, 2023
Geometry, Topology of Deformations of Complex Surface Singularities Seoul, Korea	February 1-3, 2023
Topics in Algebra, Topology, Etc. Research Seminar Boise State, Idaho	September 2, 2022
Trisectors Workshop 2022 Western Washington University	June 27 - July 1, 2022
3CinG Symplectic versus algebraic geometry at Warwick	May 28 - June 1, 2022
ICERM Conference Braids in Symplectic and Algebraic Geometry	March 21, 2022
U Minnesota Differential Geometry and Symplectic Topology Seminar	March 17, 2022
CIRM Research School Milnor Fibrations, Degenerations and Deformations from a Modern Perspective	September 6-10, 2021
MSRI Summer School: Gauge theory in Geometry and Topology	July 5-16, 2021
Iberoamerican Webminar of Young Researchers in Singularity Theory	June 23, 2021
Hebrew University Topology and Geometry Seminar	May 25, 2021
Princeton/IAS/Montreal/Paris/Tel-Aviv Symplectic Seminar	May 7, 2021
inteGIRLS Bay Area Chapter, Spring Math Competition	April 25, 2021
Northwestern University, Geometry and Physics Seminar	April 22, 2021
Chinese University of Hong Kong, Representations and Number Theory Seminar	April 5, 2021
UC Davis Geometry-Topology Seminar	February 9, 2021
Western Washington University Colloquium	February 4, 2021
University of Nevada, Reno, Geometry-Topology Seminar	October 2, 2020
Virtual Trisectors Meeting	June 18, 2020
Western Hemisphere Virtual Symplectic Seminar	March 27, 2020

Stony Brook Symplectic Geometry Seminar	February 23, 2020
Unifying 4-dimensional knot theory Banff International Research Station	November 3-8, 2019
New developments in 4-manifolds Max Planck Institute, Bonn	September 16-20, 2019
International Symplectic Topology Conference IMPA, Rio de Janeiro	August 26-30, 2019
Homological algebra, microlocal analysis and symplectic geometry Mini-course CRM, Montreal	June 17-21, 2019
Cascade topology seminar Portland	May 11-12, 2019
Pauline Sperry Lecture University of California, Berkeley	April 4, 2019
Categorical symplectic topology Cambridge University	March 25-29, 2019
Symplectic geometry and homotopy theory workshop UCLA	December 12-15, 2018
Knotted surfaces in 4-manifolds University of Massachusetts, Amherst	October 26-28, 2018
Geometric methods in symplectic and contact topology Asilomar, CA	August 20-24, 2018
Topology in Dimensions 3, 3.5, and 4 A conference in honor of Abby, Marty, and Rob University of California, Berkeley	June 25-29, 2018
Geometric Structures on 3- and 4-manifolds Dubrovnik, Croatia	June 11-15, 2018
Gokova Geometry Topology Conference Gokova, Turkey	May 28-June 2, 2018