

# Jennifer Brown

## Curriculum Vitae

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### Personal

✉ [jm.howardbrown@gmail.com](mailto:jm.howardbrown@gmail.com)

🗣 English (Native), French (Intermediate)

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### Academic Positions

Sept. 2023 **Postdoctoral Research Associate**, *University of Edinburgh*, Edinburgh, UK  
Funded in part by the Simons Collaboration on Global Categorical Symmetries

Sept. 2022 - **Postdoctoral Fellow**, *Yale University*, New Haven, Connecticut

June 2023 Funded jointly the mathematics department and NSF grant DMS-2202753

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### Education

June 2022 **PhD, Mathematics**, *UC Davis*, Davis, California  
Dissertation:  $q$ -Holonomic Systems and Quantum Invariants  
Advised by Motohico Mulase & Tudor Dimofte

May 2013 **B.Sc, Physics and Mathematics**, *Georgetown University*, Washington, DC  
General Honors, Mathematics Honors

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### Awards & Fellowships

**Mathematical Sciences Postdoctoral Research Fellowship (MSPRF)**, National Science Foundation, September 2022 - August 2026  
DMS-2202753.

**Dissertation Year Fellowship**, UC Davis Graduate Studies, '21-'22 Academic Year  
12-month fellowship covering tuition, fees, and living expenses. Awarded to doctoral students demonstrating strong potential for university teaching and research.

**Junior Fellowship**, Institut Mittag-Leffler, September to December 2020  
Travel, living expenses, and accommodation to support participation in the “Knots, Strings, Symplectic Geometry and Dualities” research program.

**Yueh-Jing Lin Award**, UCD Department of Mathematics, June 2020  
Awarded to high-achieving mathematics students.

**Graduate Student Travel Award**, UCD Graduate Studies, December 2019  
Awarded to support travel to Quito, Ecuador to run a workshop on Knot Theory.

**Hazel B. Jacoby Fellowship**, UCD Department of Mathematics, June 2019  
Awarded by the Department of Mathematics for the purpose of recruiting and retaining outstanding graduate students.

**GSA Travel Award**, UCD Graduate Student Association, January 2018  
Award to support travel to The Fields Institute for a workshop.

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## Publications

Jennifer Brown, Tudor Dimofte, Stavros Garoufalidis, and Nathan Geer. The ADO invariants are a q-holonomic family, May 2020. arXiv:2005.08176.

Kai He, Jennifer Brown, Stephan Haas, and Marcos Rigol. Driven dipole oscillations and the lowest-energy excitations of strongly interacting lattice bosons in a harmonic trap. *Phys. Rev. A*, 89:033634, Mar. 2014.

Jennifer Brown. Parametric excitations of lattice hard-core bosons in a time-dependent harmonic trap. Master's thesis, Georgetown University, 2013. B.Sc. Honors Thesis.

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## Invited Talks

- **Diagrammatics and Stratified Factorization Homology**, June 13th, 2023  
Séminaire de Géométrie et Topologie, Institut de Mathématiques de Toulouse, France.
- **Skein Theory and Quantized Knot Invariants**, April 7th, 2023  
Séminaire de Groupes, Représentations et Géométrie, Institut de Mathématiques de Jussieu-Paris Rive Gauche. Paris, France.
- **Skein Theory and Quantizing Character Varieties**, October 19th, 2022  
Algebraic Geometry Seminar, University of Georgia. Athens, Georgia.
- **Skein Categories and Quantization**, April 13th, 2022  
Emerging Researchers in Category Theory Seminar, Topos Institute. (Remote)
- **Racks and Quantum Invariants**, March 12, 2021  
QMAP Seminar, UC Davis. Davis, CA.
- **Recursion Properties of Quantum Invariants**, October 2020  
Informal Research Seminar, Institut Mittag-Leffler. Djursholm, Sweden.
- **Knot Invariants, Quantum Groups, and the Knot Group**, December 17, 2019  
Greifswald Universitaet. Greifswald, Germany.

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## Contributed Talks

- **Skeins and Quantization**, October 7th, 2022  
MFO Miniworkshop, Oberwolfach, Germany.
- **Quantum Moment Maps**, May 19th 2022  
Matemale Spring School, Institut de Mathématiques de Toulouse. Matemale, France.
- **Measuring Recursion**, May 24, 2021  
WAM Postdoc Seminar, Institute for Advanced Study. (Remote)
- **Cluster Structures**, March 26, 2021  
Clusters Seminar, UC Davis. Davis, CA.
- **Cluster Algebras: Total Positivity**, March 12, 2021  
Clusters Seminar, UC Davis. Davis, CA.
- **C2 Algebras**, March 3, 2021  
Vertex (Operator) Algebra Reading Seminar, University of Edinburgh. Edinburgh, UK.

- **The Fundamental Quandle and Braiding in Categories**, January 21, 2021  
Student-Run Research Seminar, UC Davis. Davis, CA.
- **Recursion Properties of Quantum Knot Invariants**, October 1, 2019  
Student-Run Research Seminar, UC Davis. Davis, CA.
- **K-Theory and the A-polynomial**, May 20, 2019  
Qualifying Exam Talk, UC Davis. Davis, CA.
- **Paired classical and quantum knot invariants and a K-theory clue for Heisenberg quantization.**, October 24, 2018  
Student-Run Research Seminar, UC Davis. Davis, CA.
- **K-Theory for C\*-Algebras: Crossed Products**, April 3, 2018  
Anyons Working Seminar, UC Davis. Davis, CA.
- **K-Theory for C\*-Algebras: Introduction**, January 9, 2018  
Anyons Working Seminar, UC Davis. Davis, CA.

## Invited Workshops & Programs

- **Complex Lagrangians, Mirror Symmetry, and Quantization**, October 15 - 20, 2023  
Banff International Research Station, Banff, Canada.
- **Quantum Invariants and Low-Dimensional Topology**, August 14 - 18, 2023  
American Institute of Mathematics (AIM), Pasadena, California.
- **Quantization of Complex Symplectic Varieties**, October 2 - 8, 2022  
MFO, Oberwolfach, Germany.
- **Geometric Structures (re)United, Higgs Bundles, Geometric Structures, and Character Varieties**, June 13 - 17, 2022, *With support from the organizers*  
University of Illinois at Chicago.
- **Recent Developments in Representation Theory and Mathematical Physics**, March 20 - 26, 2022  
MFO, Oberwolfach, Germany.
- **Representation Theory: Categories and Combinatorics**, May 22 - 28, 2021, *Terng Lecture Teaching Assistant*  
Institute for Advanced Study. (Remote)
- **Knots, Strings, Symplectic Geometry and Dualities**, September 30 - December 11, 2020, *With fellowship support from the organizers*  
Institut Mittag-Leffler. Djursholm, Sweden.
- **Graduate Summer School: Quantum Field Theory and Manifold Invariants**, June 30 - July 20, 2019, *With support from the organizers*  
Park City Mathematics Institute. Park City, Utah.
- **QFT for Mathematicians**, June 17 - 28, 2019, *With support from the organizers*  
Perimeter Institute. Waterloo, Canada.

- **Séminaire de Mathématiques Supérieures 2018: Derived Geometry and Higher Categorical Structures in Geometry and Physics**, June 11 - 22, 2018, *With support from MSRI and the UC Davis GSA*  
The Fields Institute. Toronto, Canada

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## Other Conferences & Workshops

- **TQFTs and Their Connections to Representation Theory and Mathematical Physics**, June 19 - 23, 2023  
Hausdorff School of Mathematics, Bonn, Germany.
- **Winter Braids XII**, February 21 - 24, 2023  
Université de Tours, France.
- **Learning Workshop on BPS States and 3-Manifolds**, Feb. 27 - March 3, 2023  
International Centre for Theoretical Physics, Trieste, Italy.
- **Matemale Spring School on Witten's finiteness conjecture for skein modules**, May 16 - 20, 2022, *With support from the organizers*  
Matemale, France
- **Women at the Intersection of Math and Theoretical Physics**, February 22 - 25, 2021  
Perimeter Institute. (Remote)
- **Higher Categories and Categorification**, February 10 - 14, 2020  
MSRI. Berkeley, California
- **Quantum Symmetries**, January 27 - 31, 2020  
MSRI. Berkeley, California
- **Integrability, Geometry and Moduli**, July 29 - August 2, 2019, *With support from the organizers.*  
Max Planck Institute for Mathematics. Bonn, Germany.
- **Chiral Algebras for the 21st Century**, April 15 - 19, 2019  
Davis, California
- **Derived Algebraic Geometry and its Applications**, March 25 - 29, 2019  
MSRI. Berkeley, California
- **Derived Algebraic Geometry, Birational Geometry and Moduli Spaces**, January 28 - February 8, 2019  
MSRI. Berkeley, California
- **International Congress of Mathematicians**, August 01 - 09, 2018, *With support by the NSF grant of Motohico Mulase*  
Rio de Janeiro, Brazil
- **XIX International Congress on Mathematical Physics**, July 23 - 28, 2018, *With support by the NSF grant of Evans Harrell*  
Montreal, Canada
- **Summer School on Current Topics in Mathematical Physics**, July 17 - 21, 2017, *With support from the organizers*  
Universität Zürich. Zurich, Switzerland.

- **Connections for Women: Geometric and Arithmetic Aspects of Homogeneous Dynamics**, January 29 - 30, 2015  
MSRI. Berkeley, California

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## Service

- Summer 2021, 2022 **REU Program Assistant**, *UCD Mathematics Department*  
Supported a summer research program for 13 undergraduates. Helped organize and run field trips, handled bike assembly and repairs, mentored students on their individual projects.
- Spring 2021 **Cluster Algebras Seminar Organizer**, *UCD Mathematics Department*  
Organized a student seminar on cluster algebras.
- 2020 - 2021 **Calculus Room Coordinator**, *UCD Mathematics Department*  
Ran the department's calculus tutoring center, overseeing operations for over 80 TAs serving over 3000 calculus students.
- 2020- 2021 **Mentor**, *UCD Mathematics Department*  
One-on-one mentoring for mathematics undergraduates and recent graduates from underrepresented groups, specifically women, people of color, and first generation students. Supported graduate applications and research ambitions.
- 2018 - 2020 **President**, *The Math and Applied Math Galois Group*  
Ran the mathematics graduate student association at UC Davis. Organized events, oversaw all graduate office assignments within the department. Point of contact for graduate concerns.
- 2017 - 2020 **Wilderness Guide**, *UCD Outdoor Adventures*  
Led backpacking and snow-camping trips for small groups.
- Fall 2011 **Volunteer Instructor**, *US State Department - EducationUSA Accra*  
Taught introductory mathematics and physics in classroom settings and with small groups. Advised Ghanaian high school graduates pursuing higher education in the United States.
- 2001-2008 **Youth Leader**, *Girl Scouts of America - Backpacking Interest Group*  
Helped plan and lead backpacking trips for pre-teen and teenage girls. Maintained backpacking equipment, obtained permits, and administered first aid.

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## Work Experience

- 2016 - 2020 **Teaching Assistant**, *UC Davis Mathematics Department*  
Led discussion sections for undergraduate calculus courses. Prepared lectures, administered exams and quizzes, graded, and held office hours.
- 2013-2016 **Data Infrastructure Engineer**, *Opower (Oracle Subsidiary)*  
Designed, built, and managed both MySQL and Hadoop/Hbase based distributed compute and storage infrastructure. Built-out monitoring and provisioning systems, maintained tooling and cluster job code in Java, Ruby, Python and Bash. Served as on-call engineer.
- 2012-2013 **Research Assistant**, *G.U. Physics Department*  
Worked under Professor Marcos Rigol. Studied hard-core lattice bosons in modulated trapping potentials. Implemented simulations in C/C++, managed, processed and interpreted data.
- Summer 2012 **Summer Student**, *CERN*  
Worked with the LHCb online control group in preparation for the 2013 LHC upgrade. Prototyped custom networking hardware for measuring network latencies with nanosecond accuracy using FPGAs. Presented work in an internal communication.

2010-2012 **Research Assistant**, *G.U. Mathematics Department*

Worked under Professor Judith Miller. Researched effects of migration on the genetic architecture of populations, specifically the phenomenon of mutation surfing. Designed computer simulations, interpreted results and worked on data processing. Presented results in regular reports and at a conference.

Summer 2010 **Trekking Co-director**, *Boy Scouts of America*

Organized and ran week-long backpacking trips in the California's Sierra Nevada. Responsibilities included all meal planning and preparation, route setting, coordination with base camp staff, wilderness medical care, organizing service projects and educational programs.

Summers of **Sports Director, Head Stewart**, *Boy Scouts of America*

2008, 2007 Lead a small team in designing and running outdoor educational programs. Managed inventories, organized meals for 200+ scouts in cooperation with kitchen staff. Administered first aid and organized service projects.