Joshua Wiscons

Associate Professor of Mathematics

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Education

2011 **PhD**, *Mathematics, University of Colorado, Boulder.*

2004 **MS**, *Mathematics, Southern Illinois University, Carbondale.*

2001 **BS**, *Electrical Engineering & Mathematics, Southern Illinois University, Carbondale.*

Employment

2021–Present **Associate Professor of Mathematics**, *California State University, Sacramento.*

2016–2021 **Assistant Professor of Mathematics**, *California State University, Sacramento.*

2014–2016 **Visiting Assistant Professor of Mathematics**, *Hamilton College.*

2012–2014 **NSF International Research Fellow**, *Universität Münster*, Germany.

2011–2012 **Visiting Assistant Professor of Mathematics**, *Hamilton College.*

Invited Research Visits

June 2023 **Centre International de Rencontres Mathématiques**, *France*, 1 week.

June 2022 **École Normale Supérieure - PSL**, *France*, 1 month.

Nov. 2013 **Hausdorff Institute for Mathematics**, *Germany*, 1 month.

Selected Grants & Awards

2020–2023 **NSF Standard Grant**, *National Science Foundation.*
PI, *RUI: Geometry and Complexity in the Model Theory of Groups.*
AWARD NUMBER: DMS-1954127.

2019–2020 **Pedagogy Enhancement Award**, *California State University, Sacramento.*
Co-PI, *Making WeBWorK a superior instructional option at Sacramento State.*

2017–2018 **Research and Creative Activity Award**, *California State University, Sacramento.*
PI, *Groups and geometries of finite Morley rank.*

2017–2018 **Pedagogy Enhancement Award**, *California State University, Sacramento.*
Co-PI, *Implementing WeBWorK in Calculus Courses.*

2012–2014 **NSF International Research Fellowship**, *National Science Foundation.*
PI, *Multiply transitive and generically multiply transitive groups of finite Morley rank.*
AWARD NUMBER: OISE-1064446. HOST: Prof. Dr. Dr. Katrin Tent.

Articles

13. Tuna Altınel and Joshua Wiscons. Bounding the degree of generic sharp transitivity. Submitted. Preprint, arXiv:2407.09636 [math.GR].
12. Barry Chin, Adrien Deloro, Joshua Wiscons, and Andy Yu. On $\mathrm{Alt}(n)$-modules with an additive dimension when $n \leq 6$. Submitted. Preprint, arXiv:2405.05230 [math.GR].
11. Tuna Altınel and Joshua Wiscons. Actions of $\mathrm{Alt}(n)$ on groups of finite Morley rank without involutions. *Proc. Amer. Math. Soc.*, 152(1):391–401, 2024.
10. Luis Jaime Corredor, Adrien Deloro, and Joshua Wiscons. $\mathrm{Sym}(n)$- and $\mathrm{Alt}(n)$-modules with an additive dimension. *J. Algebra*, 623:1–33, 2023.
9. Adrien Deloro and Joshua Wiscons. The geometry of involutions in ranked groups with a TI-subgroup. *Bull. Lond. Math. Soc.*, 52:411–428, 2020.
8. Tuna Altınel and Joshua Wiscons. Toward the recognition of PGL_n via a high degree of generic transitivity. *Comm. Algebra*, 47(1):206–215, 2019.

7. Adrien Deloro and Joshua Wiscons. Simple groups of Morley rank 5 are bad. *J. Symb. Log.*, 83(3):1217–1228, 2018.
6. Tuna Altınel and Joshua Wiscons. Recognizing PGL_3 via generic 4-transitivity. *J. Eur. Math. Soc. (JEMS)*, 20(6):1525–1559, 2018.
5. Joshua Wiscons. A reduction theorem for primitive binary permutation groups. *Bull. Lond. Math. Soc.*, 48(2):291–299, 2016.
4. Joshua Wiscons. Groups of Morley rank 4. *J. Symb. Log.*, 81(1):65–79, 2016.
3. Joshua Wiscons. Moufang sets of finite Morley rank of odd type. *J. Algebra*, 402:479–498, 2014.
2. Josh Wiscons. On groups of finite Morley rank with a split BN-pair of rank 1. *J. Algebra*, 330(1):431–447, 2011.
1. Josh Wiscons. Special abelian Moufang sets of finite Morley rank in characteristic 2. *J. Group Theory*, 13(1):71–82, 2010.

Open-Source Book

1. Joshua Wiscons. Insolvability of the Quintic: An Inquiry-Based Approach to a Second Course in Abstract Algebra. Available online at `github.com/jwiscons/IBL-InsolvabilityOfQuintic`.

Other Products

3. Joshua Wiscons. A short course on groups of finite Morley rank. Notes to support a mini-course on groups of finite Morley rank given at the Hausdorff Institute for Mathematics in November 2018. Available online at `webpages.csus.edu/wiscons/research/GFMR-Minicourse-Notes.pdf`
2. Joshua Wiscons. `RComp.g`. Code to compute the relational complexity of a permutation group in GAP. Available online at `webpages.csus.edu/wiscons/research/code/RComp.html`
1. Joshua Wiscons. Section on *Modular Arithmetic* in the book "An Introduction to Proof via Inquiry-Based Learning" by Dana C. Ernst. Available online at `github.com/dcernst/IBL-IntroToProof`.

Supervised Research

2023–24 Collaborating with one student on a project titled *Abstract 3D-rotation groups and recognition of icosahedral modules.* The student was partially supported by a research assistantship funded by NSF award DMS-1954127.

2022 Collaborated with one student on a project titled *On the relational complexity of* $\mathrm{A\Gamma L}_n$. The student was partially supported by a research assistantship funded by NSF award DMS-1954127.

2021 Collaborated with two students on a project titled *On the minimal* $\mathrm{Sym}(n)$*- and* $\mathrm{Alt}(n)$*-modules with an additive dimension for* $n \leq 6$. One student was partially supported by a research assistantship funded by NSF award DMS-1954127.

Summer 2018 Supervised one student on a project titled *The relational complexity of symmetric groups acting on partitions.* The student was supported by a Summer Undergraduate Research Experience (SURE) award through California State University, Sacramento.

Selected Talks

Nov. 2022 *Geometry of involutions in ranked groups.* Panglobal Algebra and Logic Seminar, University of Colorado at Boulder (given virtually).

July 2022 *Geometry of involutions in ranked groups.* Séminaire Logique Mathématique, Institut Camille Jordan, France.

Sep. 2021 *Minimal representations of* $\mathrm{Sym}(n)$ *and* $\mathrm{Alt}(n)$. Groupes rangés : le retour, Institut Camille Jordan, France (given virtually).

Mar. 2021 *The minimal faithful* $\mathrm{Sym}(n)$*- and* $\mathrm{Alt}(n)$*-modules.* Logic Seminar, Imperial College, United Kingdom (given virtually).

Apr. 2020 *The geometry of involutions in groups of finite Morley rank.* Logic Colloquium, University of California, Berkeley (given virtually).

May 2019 *Status of the classification of finite Morley rank actions with a high degree of generic transitivity.* Logic Colloquium, University of California, Los Angeles.

Mar. 2019 *Status of the classification of finite Morley rank actions with a high degree of generic transitivity.* Logic Seminar, University of Illinois at Chicago.

Nov. 2018 *A short course on groups of finite Morley rank.* Trimester Program on Logic and Algorithms in Group Theory, Hausdorff Institute for Mathematics, Germany.

July 2017 *Reducing Cherlin's Conjecture for finite primitive binary groups to the almost simple case.* Dame Kathleen Ollerenshaw Combinatorics Day, University of Manchester, United Kingdom.

Mar. 2017 *Geometries and small groups of finite Morley rank.* Logic Seminar, University of Colorado at Boulder.

Oct. 2016 *Geometries and small groups of finite Morley rank.* BN-Pair Conference in honour of the 60th birthdays of Alexandre Borovik and Ali Nesin, Boğaziçi University, Turkey.

Aug. 2016 *The status of Cherlin's conjecture for primitive structures of relational complexity* 2. Special session on *Homogeneous Structures: Model Theory Meets Universal Algebra*, Logic Colloquium 2016, University of Leeds, United Kingdom.

July 2016 *An introduction to relational complexity: background, questions, and a few answers.* Workshop on the Model Theory of Finite and Pseudofinite Structures, University of Leeds, United Kingdom.

Feb. 2016 *The relational complexity of finite permutation groups.* Mathematics Seminar, Colgate University.

Jan. 2016 *The relational complexity of relational structures.* Séminaire Logique Mathématique, Institut Camille Jordan, France.

Jan. 2016 *Actions on sets of Morley rank* 2. Workshop on Model Theory: Groups, Geometry, and Combinatorics, Oberwolfach Mathematics Institute, Germany.

Nov. 2015 *Actions on sets of Morley rank* 2. Logic Seminar, Rutgers University.

May 2015 *Actions on sets of Morley rank* 2. Model Theory Seminar, CUNY Graduate Center.

Apr. 2015 *Recognizing* PGL_3 *via generic* 4*-transitivity.* Algebra Seminar, Binghamton University.

Feb. 2014 *Actions on sets of Morley rank* 2. Séminaire Logique Mathématique, Institut Camille Jordan, France.

Sep. 2013 *Generically* n*-transitive permutation groups.* Models and Groups 1, İstanbul Center for Mathematical Sciences, Turkey.

July 2013 *Generically* n*-transitive permutation groups.* Workshop on Permutation Groups, Banff International Research Station, Canada.

Mar. 2013 *Moufang sets of finite Morley rank in odd type.* Séminaire Logique Mathématique, Institut Camille Jordan, France.

Oct. 2012 *Moufang sets of finite Morley rank with nilpotent Hua subgroup.* Buildings Conference, Universität Münster, Germany.

Oct. 2010 *Identifying groups of finite Morley rank with a split* BN*-pair of rank 1.* Approaches to Group Theory Conference, Cornell University.

Selected Organizing

Apr. 2024 Co-organized the *Change Maker Series* event featuring Dr. Omayra Y. Ortega at California State University, Sacramento.

May 2023 Co-organized the *Change Maker Series* event featuring Dr. Marissa Kawehi Loving at California State University, Sacramento.

Apr. 2022 Co-organized the *Change Maker Series* event featuring Dr. Pamela E. Harris at California State University, Sacramento.

Spring 2022 Organized the six-part seminar series *Topics in Permutation Groups* at California State University, Sacramento.

Apr. 2021 Co-organized the *Change Maker Series* event featuring Dr. Candice Price at California State University, Sacramento.

Spring 2021 Organized the six-part seminar series *Representation Theory of the Symmetric Group* at California State University, Sacramento.

Sep. 2020 Co-organized the panel discussion *Radically Reimagined: A Discussion on Racism and Antiracism in Education* as a part of the Fall 2020 Convocation at California State University, Sacramento.

Oct. 2018 Co-organized a workshop and public talk at California State University, Sacramento on *Inquiry-Based Methods and Equity in STEM Courses* by Dr. Danielle Champney and Dr. Todd Grundmeier.

Feb. 2017 Co-organized a workshop and public talk at California State University, Sacramento on *Uprooting Racism: Making an Anti-Racist Community* by Paul Kivel.

Professional Development Design & Facilitation

2017–2024 **Co-facilitator**, Professional Learning Community on *Designing for Student Success: Building Inclusive Practices by Interrogating Power and Privilege*, *California State University, Sacramento.*

Year-long course for faculty/staff (with 18 face-to-face hours) to engage in reading, reflection, discussion, and a project around topics such as power, privilege and identity with a focus on designing for inclusive learning and working environments.

2023–2024 **Co-facilitator**, Learning Community on *Equitable & Inclusive Practices*, *Penn State Berks.*

Year-long course for program chairs (with 12 face-to-face hours including a 5 hour workshop) to engage with key concepts around identity, power, privilege, anti-racism, equity, inclusivity and cultural humility towards developing program assessments to critically investigate student, faculty and staff success.

2018–2022 **Co-facilitator**, Session on Equity and Inclusion for New Faculty Orientation, *California State University, Sacramento.*

SESSION TITLE: *Teaching Diverse Learners: The Syllabus* (2018, 2019), *Designing for Student Success: Equity, Power, and Privilege in the Classroom* (2020–2022)

2018–2020 **Co-facilitator**, Session on Equity andIinclusion for the Summer Teaching Institute, *California State University, Sacramento.*

SESSION TITLE: *Equity Practices in the Classroom* (2018), *Introduction to Equity* (2019, 2020)

2018–2019 **Co-leader**, *Institutional Equity Collaborative*, *California State University, Sacramento.*

Year-long collaboration by 11 faculty members, sponsored by the Division of Inclusive Excellence, to design professional development opportunities for all university faculty and staff.

Refereeing & Reviewing

2017–Present **Reviewer**, *Mathematical Reviews (MathSciNet), American Mathematical Society.*

2014–Present **Referee**, *various mathematical journals.*

2018, 2019, 2021 **Reviewer**, *Research and Creative Activity Faculty Awards Program*, *California State University, Sacramento.*

Courses Taught

California State University, Sacramento

Math 299—Independent Study on Representation & Character Theory: F22
Math 299—Independent Study in Model Theory: F17
Math 210A/B—Algebraic Structures: F20/S21
Math 161—Mathematical Logic: F18, F23
Math 110A/B—Modern Algebra: S19/F19, F21/S22, S24
Math 108—Intro to Formal Mathematics: S17, F17
Math 102—Number Theory: S18, S20, F21, F22, F23
Math 100—Applied Linear Algebra: S19, F22, F23, S24
Math 35—Linear Algebra: S24
Math 31—Calculus 2: F16, F20, S21
Math 30—Calculus 1: S17, F17, S18, F18, S19, S20
Math 29—PreCalculus: F19

Hamilton College

Math 437—Senior Seminar in Algebra: F15, F14
Math 325—Modern Algebra: S15
Math 224—Linear Algebra: S16, F15, S12, F11
Math 114—Calculus 2: F15, S12
Math 113—Calculus 1: F14, F11