

CRAIG H. JACKSON
ASSOCIATE PROFESSOR OF MATHEMATICS
OHIO WESLEYAN UNIVERSITY

EDUCATION

University of Chicago	Mathematics	Ph.D.	2007
The Ohio State University	Mathematics	M.S.	2001
University of Alaska, Anchorage	Mathematics	B.S.	1999

TEACHING APPOINTMENTS

Associate Professor of Mathematics, Ohio Wesleyan University, 2013–present

Assistant Professor of Mathematics, Ohio Wesleyan University, 2009–2013

- CS 103: Exploring Computer Science
- Math 104: Great Ideas in Mathematics
- Math 110, 111: Calculus I, II
- Math 200.2: Mathematical Models of Climate
- Math 250: Discrete Mathematics
- Math 270: Linear Algebra
- Math 280: Differential Equations
- Math 330: Complex Variables
- Math 340, 440: Analysis I, II
- Math 370, 470: Abstract Algebra I, II
- Math 380: Applied Mathematics
- Math 498: Student Seminar [Graph Theory; Differential Geometry]
- Math 499: Seminar [Knot Theory; Topology]
- Zool 345: Marine Biology (co-taught with Prof. Amy Downing)

Ross Assistant Professor of Mathematics, The Ohio State University, 2007–2009

- Math 150: Elementary Functions
- Math 151: Calculus and Analytic Geometry I
- Math H162, H162: Honors Accelerated Calculus I, II
- Math 254: Calculus and Analytic Geometry IV
- Math 366: Discrete Mathematical Structures I
- Math 568: Introductory Linear Algebra I
- Math 571: Linear Algebra for Applications I
- Math 575: Combinatorial Mathematics and Graph Theory

Lecturer, University of Chicago, 2004–2007

- Math 131, 132, 133: Elementary Functions and Calculus I, II, III
- Math 152, 153: Calculus II, III
- Math 250: Linear Algebra

College Fellow, University of Chicago, 2002–2003

- Math 203, 204, 205: Analysis in \mathbb{R}^n I, II, III (Recitation)

Graduate Teaching Assistant, The Ohio State University, 2000–2001

- Math 151, 152, 153: Calculus and Analytic Geometry I, II, III (Recitation)

UNDERGRADUATE RESEARCH

Research Mentor, NSF-REU in Math and Physics, Ohio Wesleyan University

- Claire Puckett (Case Western) *Theoretical Notions of Ecological Stability and Their Relation to Temporal Variability* (2016)
- Colton Piper (Plymouth State), *Analysis of Climate Feedbacks: Local vs Non-Local Effects* (2015)
- Joy Kimmel (Gordon College) & Kristen Lee (Weber State University), *Ice/Bedrock feedbacks as a principle contributor to glacial/inter-glacial oscillations* (2014)
- Onyebuchi Ekenta (Washington and Lee), *A Quantum Analog of Lawrence Representations* (2013)
- Ben Letson (OWU), *Extension of Burau Representation to String Links* (2013)
- Elden Elmanto (Chicago), *Homological Representations of Braids and BMW Algebras* (2012)
- Matt Hughes (Bard), *Lawrence Representations in Cases $\ell = 3, 4$* (2012)
- Christian Bueno (FIU), *Representations of String Links and Tangles* (2011)
- Marc Khoury (OSU), *Topological and Quantum Representations of the Braid Groups* (2010)

Research Mentor, Summer Science Research Program, Ohio Wesleyan University

- Khanh Le (OWU), *Specialization of the Lawrence Representations of Braid Groups at Roots of Unity* (2015)
- Charles Brechtel (OWU), *Katabatic Flow on the Juneau Icefield* (2012)
- Hao Do, Yixin Liu (OWU), *Inheritance of Fitness in the Hawk-Dove Evolutionary Game* (2011)
- Hao Do (OWU), *Discrete Rank Based Methods for Detecting Copy Number Aberration* (2010)

Independent Research Project Mentor, Ohio Wesleyan University

- Isaac Kochman (OWU), Department Honors, *Survey of Enumerative Combinatorics* (2017)
- Nam Tran Hoang (OWU), Department Honors, *Exact Form for Rank Sum Statistics for Assessing Genetic Copy Number Variation* (2016)
- Khanh Le (OWU), Department Honors, *Specialization of the Lawrence Representations of Braid Groups at Roots of Unity* (2016)
- Charles Brechtel (OWU), *Synoptic Scale Signals in Katabatic Flow Models* (2012)
- Sriharsha Masabathula (OWU), *Assessing the Impact of Afforestation on Global Climate* (2011)

Affiliated Faculty, Juneau Icefield Research Program (2011–2012)

Mentor, VIGRE Directed Reading Program, University of Chicago

- Commutative Algebra (2007)
- Ordinal Numbers and Cardinal Arithmetic (2004)
- Lie Groups (2003)

Mentor, University of Chicago Research Experience for Undergraduates (2003): Knots and Links (for Benson Farb), Brouwer Degree In Topology (for Marta Lewicka)

PEER REVIEWED PUBLICATIONS (* INDICATES AN UNDERGRADUATE CO-AUTHOR)

V. Alexeev, C. Jackson, *Polar Amplification: Is atmospheric heat transport important?* *Climate Dynamics* **41**:2 (2013) 533–547

*B. Letson, C. Jackson, *Evidence for the Equivalence of the Lin and Skein Representations of String Links*, *Proceedings of the Midstates Conference for Undergraduate Research in Computer Science and Mathematics* **10** (2013)

C. Jackson, *S. Matabathula, *Modeling the Impact of Afforestation on Global Climate: A 2-Box EBM*, *Journal of Environmental Statistics* **4**:12 (2013)

C. Jackson, *Topologies of Identity in Serial Experiments Lain*, in **Mechademia 7: Lines of Sight**, Ed. Frenchy Lunning, Univ. of Minnesota Press (2012) 191–201

C. Jackson, T. Kerler, *The Lawrence-Krammer-Bigelow representations of the braid groups via*

$U_q(sl_2)$, *Advances in Mathematics* **228** (2011) 1689–1717

*H. Do, *Y. Liu, C. Jackson, *Soft Inheritance in the Hawk-Dove Model*, Proc. Midstates Conference for Undergraduate Research in Computer Science and Mathematics, Denison University (2011)

OTHER PUBLICATIONS

C. Jackson, Review of *Mathematics and Climate*, by H. Kaper and H. Engler, *The American Mathematical Monthly*, Vol. 123, no. 3 (March 2016) pp. 304–308

F. Alayont, Y. Babenko, C. Jackson, and Z. Szaniszló, *Challenges in promoting undergraduate research in the mathematical sciences*, *Involve* **7:3** (2014) 265–271

C. Jackson, *The Big Lebowski and Mathematical Logic*, in **The Big Lebowski and Philosophy**, Ed. Peter Fosl, *The Blackwell Philosophy and Pop Culture Series*, Wiley-Blackwell (2012) 24–36

C. Jackson, *Evolutionary Game Theory: The Hawk-Dove Game*, *Computational Science Across the Curriculum*, Capital Univ. (2010), <http://www.capital.edu/cs-math/>

PROFESSIONAL ACTIVITIES

External Reviewer, Math/CS Department, Wabash University (2017)

External Reviewer, Doane Fellowship, Denison University (2017)

Honors Examiner, Oberlin College (2017)

Convener and Co-Chair, *New Perspectives on Quaternary Climate: Forcing Mechanisms, the Mid-Pleistocene Transition, and Interglacial Climate* (PP31B) Am. Geophys. Union Fall Meeting (2016)

Co-Director, Sagan National Colloquium on *Data in Our Lives*, Ohio Wesleyan University (2016)

Co-Organizer, Paleoclimate Seminar, Mathematics and Climate Research Network (2014–present)

Co-Organizer, Four Colleges Mathematics Competition, Ohio Wesleyan University (2011, 2014)

Co-Organizer, Young Mathematicians Conference, The Ohio State University (2011–present)

Faculty Associate, Arneson Institute for Practical Politics and Public Affairs (2014–present)

Co-Director, Sagan National Colloquium on *Interdisciplinary Impacts of Climate Change*, Ohio Wesleyan University (2013)

Co-Organizer, Midstates Conference for Undergraduate Research in Computer Science and Mathematics, Ohio Wesleyan University (2012, 2013)

Invited Participant, Trends in Undergraduate Research in Mathematical Sciences Conference, Chicago, Illinois (2012)

Invited Participant, Summer School on Modeling of the Arctic Climate System, International Arctic Research Center, University of Alaska, Fairbanks (2011)

Participant, Summer Workshop on Mapping Class Groups, University of Chicago (2006)

Edited *Lectures on the Orbit Method* (AMS 2004), by A.A. Kirillov (2003)

PROFESSIONAL MEMBERSHIPS

American Mathematical Society

Mathematical Association of America

Mathematics and Climate Research Network

American Geophysical Union

AWARDS AND GRANTS

Theory to Practice Grant, Ohio Wesleyan University, \$8,600 (2017)
Co-PI, Young Mathematicians Conference, NSF DMS-1550117, \$143,000 (2016–18)
Co-PI, Young Mathematicians Conference, NSF DMS-1252904, \$180,000 (2013–15)
RUMC Conference Grant, MAA, \$1200 (2012), \$950 (2013)
Pedagogical Conference Grant, OWU TLCCPC, \$400 (2013)
Co-PI, Young Mathematicians Conference, NSF DMS-0841054, \$75,000 (2012)
Theory to Practice Grant, Ohio Wesleyan University, \$14,500 (2012–2013)
Travel Support, TURMS Conference, NSF/NSA, \$1000 (2012)
Scholarly Leave, Ohio Wesleyan University (2012)
Travel Support, University of Alaska, Fairbanks, IARC/JAMSTEC, \$2500 (2012)
VIGRE Travel Grant (2004)
University Fellowship, The Ohio State University (1999)
National Science Foundation Graduate Fellowship, Honorable Mention (1999)
Departmental Scholarship, University of Alaska, Anchorage (1998)
Barry M. Goldwater Scholarship (1998)

UNIVERSITY SERVICE

Faculty Personnel Committee (2017–2018)
Academic Policy Committee (2014–2017) – Chair, Spring 2017
Hiring Committee for Vice President of Student Engagement and Success (Spring 2016)
Retention Task Force (2015–2016)
GLCA Academic Council (2014, 2016)
Committee on Honorary Degrees (2014–2017)
Academic Policy Committee, Replacement Appointment (Spring 2013, Spring 2014)
Summer Science Research Program Selection Committee (2013)
Academic Conduct Review Board (2011–2014)
GLCA/CUR STEM Committee (2011–2015)
HHMI Proposal Committee (2011)
Instructor, UC 160: The Freshman Connection (Fall 2010)
Residential Life Advisory Committee (2009–2010)

CONFERENCE PRESENTATIONS

Data-Driven Models of Plankton Ecosystems: Making a Case for Noise, SIAM Conference on Applied Mathematics Education (October 2016) ED16–MS1: Data-Driven Mathematics in the Undergraduate Classroom

A Matrix Approach for Assessing the Non-Local Effects of Local Feedback Processes, American Geophysical Union Fall Meeting (December 2014) A21H-3129: Climate Sensitivity and Feedbacks: Advances and New Paradigms III - Posters

Modeling the Impact of Afforestation on the Global Climate, Geological Society of America, South-Central Section Meeting, Austin, Texas (April 2013) GSA Abstracts Vol. 45 No. 3 pg. 65.

Polar Amplification: Is Atmospheric Heat Transport Important?, Geological Society of America, South-Central Section Meeting, Austin, Texas (April 2013) GSA Abstracts Vol. 45 No. 3 pg. 65.

The Lawrence-Krammer-Bigelow Representation of the Braid Groups via Quantum \mathfrak{sl}_2 , Special Session on Invariants of Knots, Links, and 3-Manifolds, American Mathematical Society Sectional Meeting, Newark NJ (May 2010)

Game Theory for Students Who Like Games, But Not Theory, Mathematical Association of America Regional Conference, Kenyon College (October 2009)

Nilpotent Slices, Hilbert Schemes and Symplectic Link Invariants, AMS Sectional Meeting, Miami University, Oxford (April 2007)

Braid Group Representations and Algebraic Topology, Mathematical Association of America Regional Conference, University of Alaska, Anchorage (June 2004)

A Quantum Analogue of a Homological Braid Group Representation, Special Session on Quantum Topology in Dimension Three. American Mathematical Society Sectional Meeting, University of Michigan, Ann Arbor (March 2002)

SEMINARS, TALKS, AND COLLOQUIA

Braids, Biology, and the Binomial Theorem, Oberlin College (April 2017)

Braids, Links, and the Alexander Polynomial, University of Alaska, Anchorage (October 2015)

Mathematical models of climate/glacier interaction, Kenyon College (April 2015)

Science and Statistics: Why Sometimes Small Datasets Are Better Than Big Ones, Women in Science (March 2014)

On the Welander Thermohaline Overturning Model, Paleoclimate Seminar, Mathematics and Climate Research Network, (March 2014)

Braids, Links, and the Alexander Polynomial, Oberlin College (March 2013)

Polar Amplification: Assessing Contributions of Individual Climate Processes, Mathematics and Climate Research Network (February 2013)

Mechanisms of Polar Amplification, Juneau Icefield Research Program, Atlin, B.C. (August 2012)

Education Through Expedition: The Juneau Icefield Research Program, Teaching, Learning, and Cross-Cultural Programming Lunch Series, Ohio Wesleyan University. Also given to the Ohio Wesleyan Women in Science Student Organization (September 2011)

The Polar Amplification Debate, Juneau Icefield Research Program, Juneau, Alaska (July 2011)

Static Models of Glaciers, Juneau Icefield Research Program, Juneau, Alaska (July 2011)

Evolutionary Game Theory and The Hawk Dove Game, Denison University (November 2010)

Modeling Evolution Using Game Theory, Ohio Wesleyan University (September 2010)

Building a Longer Line, Kenyon College (March 2010)

Knots and the Universe, Ohio Wesleyan University (February 2010)

Building a Longer Line, Ohio Wesleyan University (September 2009)

On Hooke's Understanding of the Attractive Gravitational Force, Reading Classics Seminar, The Ohio State University (April 2008)

Nilpotent Slices and Hilbert Schemes for Semi-Simple Algebras, Low Dimensional Topology Seminar, The Ohio State University (November 2007)

A Family of Quantum \mathfrak{sl}_2 Representations of the Braid Groups, Topology Seminar, The Ohio State University (May 2004)