

CONTACT INFORMATION	1550 Kanalui St. Honolulu, HI 96816 USA	tel: 212-308-4134 url: williamdemeo.org email: williamdemeo@gmail.com
RESEARCH INTERESTS	Universal algebra, lattice theory, logic, computational complexity, recursion theory, type theory, programming languages.	
EDUCATION	<i>Doctor of Philosophy in Mathematics</i> , University of Hawaii <i>Thesis</i> : Congruence lattices of finite algebras. <i>Advisor</i> : Ralph Freese	2012
	<i>Master of Science in Mathematics</i> , New York University Courant Institute <i>Thesis</i> : Approximating eigenvalues of large stochastic matrices. <i>Advisor</i> : Jonathan Goodman	1998
	<i>Bachelor of Arts in Economics</i> , University of Virginia	1994
ACADEMIC APPOINTMENTS	<i>Visiting Assistant Professor</i> , University of Hawaii, Honolulu	2016–2017
	<i>Post-doctoral Associate</i> , Iowa State University, Ames	2014–2016
	<i>Visiting Assistant Professor</i> , University of South Carolina, Columbia	2012–2014
PROFESSIONAL EXPERIENCE	<i>Senior Research Scientist</i> , Textron Systems Corporation <i>Role</i> : image processing and dsp research; algorithm design and complexity analysis	2001–2006
GRANTS & AWARDS	<i>NSF Research Grant</i> (grant no. 1500218) <i>Project Title</i> : “Algebras and algorithms, structure and complexity theory” <i>Role</i> : postdoctoral fellow on a team with 6 senior scientists and 3 postdocs <i>Description</i> : 3-yr collaborative research on algebraic approaches to constraint satisfaction problems	2015–2018
	<i>Magellan Scholar Grant</i> <i>Project Title</i> : “What does a nonabelian group sound like?” <i>Role</i> : faculty mentor for undergraduate research <i>Description</i> : available at soundmath.github.io/GroupSound/GroupSound	2013–2014
	<i>ARCS Sarah Ann Martin Award for Outstanding Research in Mathematics</i>	2011
	<i>Best Paper Award, International Symposium on Musical Acoustics</i>	2004
SHORT COURSES, CERTIFICATIONS	Functional Programming Principles in Scala 6-week online course; grade: 100%	École Polytechnique Fédérale de Lausanne Verified Certificate earned 17 Nov 2016
	Functional Program Design in Scala 4-week online course; grade: 100%	École Polytechnique Fédérale de Lausanne Verified Certificate earned 6 Aug 2016
	Parallel Programming in Scala 4-week online course; grade: 100%	École Polytechnique Fédérale de Lausanne Verified Certificate earned 27 Jun 2016
	Startup Engineering 12-week online course; grade: 99.3%	Stanford University Verified Certificate earned 23 Sep 2013
	Midlands Graduate School in the Foundations of Computing Science Topics: type theory, denotational semantics, category theory	University of Birmingham April 11–15, 2016
	Oregon Programming Languages Summer School Topics: type theory, logic, semantics, verification	University of Oregon June 16–28, 2014
	Midlands Graduate School in the Foundations of Computing Science Topics: simply typed lambda calculus, domain theory, category theory	University of Nottingham April 22–26, 2014
	LMS/EPSRC Short Course in Computational Group Theory Topics: permutation & finitely presented groups, constructive recognition	University of St. Andrews Jul 29–Aug 2, 2013
	NATO ASI on Computational Noncommutative Algebra	Il Ciocco, Italy, 2003

PUBLICATIONS

Journal Articles

1. [Universal Algebraic Methods for Constraint Satisfaction Problems](#), with C. Bergman. Submitted to LMCS, December, 2016. Available at [arXiv \[cs.LO\]](#)
2. [Isotopic algebras with nonisomorphic congruence lattices](#), *Algebra Universalis* **72**:295–298, 2014. Available at [github.com/williamdemeo/Isotopy](#)
3. [Expansions of finite algebras and their congruence lattices](#), *Algebra Universalis* **69**:257–278, 2013. Available at [github.com/williamdemeo/Overalgebras](#)

Conference Proceedings

4. [Topics in nonabelian harmonic analysis and DSP applications](#), *Proceedings of the International Symposium on Musical Acoustics*, Nara, JAPAN 2004 (best paper award).
5. [Characterizing musical signals with Wigner-Ville interferences](#), *Proceedings of the International Computer Music Conference*, Göteborg, SWEDEN 2002.
6. [Approximating eigenvalues of large stochastic matrices](#), *Proceedings of the 8th Copper Mt. Conference on Iterative Methods*, Colorado, USA 1998.

In Preparation

- [Representing finite lattices as congruence lattices of finite algebras](#), with R. Freese and P. Jipsen. Draft available at [github.com/UniversalAlgebra/fin-lat-rep](#)
- [Filter membership of coatoms in partition lattices is NP-complete](#), with H. Shin. Draft available at [github.com/TypeFunc/lat-nae-3sat](#)

TEACHING
EXPERIENCE

University of Hawaii

<i>Math 215: Applied Calculus</i>	Spring 2017
<i>Math 480: Senior Seminar (topics: logic and foundations, proofs and algorithms)</i>	Spring 2017
<i>Math 244: Calculus IV</i> (link to course)	Fall 2016
<i>Math 321: Introduction to Advanced Math (intro to proofs)</i> (link to course)	Fall 2016

Iowa State University

<i>Math 317: Linear Algebra</i> (link to course)	Spring 2016
<i>Math 317: Linear Algebra</i>	Fall 2015
<i>Math 160: Survey of Calculus</i> (link to course)	Fall 2015
<i>Math 207: Elementary Linear Algebra</i> (link to course)	Spring 2015
<i>Math 165: Calculus I</i> (link to course)	Spring 2015
<i>Math 301: Abstract Algebra</i> (link to course)	Fall 2014
<i>Math 165: Calculus I</i>	Fall 2014

University of South Carolina

<i>Math 700: Linear Algebra (graduate level)</i> (link to course)	Spring 2014
<i>Math 141: Calculus I</i> (link to course)	Spring 2014
<i>Math 374: Discrete Structures</i>	Fall 2013
<i>Math 122: Calculus for Business and Social Sciences</i>	Fall 2013
<i>Math 374: Discrete Structures</i>	Spring 2013
<i>Math 122: Calculus for Business and Social Sciences</i>	Spring 2013
<i>Math 241: Vector Calculus</i>	Fall 2012
<i>Math 122: Calculus for Business and Social Sciences</i>	Fall 2012

University of Hawaii (graduate student lecturer)

<i>Math 371: Probability Theory</i>	Summer 2011
<i>Math 215: Applied Calculus I</i>	Summer 2009
<i>Math 100: Mathematical Reasoning</i>	Summer 2010

TALKS

(Slides for some of the talks listed below are available at github.com/williamdemeo/Talks)

- “Algebraic Approach to Complexity of Constraint Satisfaction Problems” (slides) Honolulu 2016
University of Hawaii Logic and Analysis Seminar
- “Some Universal Algebra Methods for Constraint Satisfaction Problems” (slides) Denver 2016
AMS Fall Western Sectional Meeting: Special Session in Algebraic Logic
- “The Rectangularity Theorem of Barto and Kozik” (slides) Boulder 2016
Algebras and Algorithms: Structure and Complexity Theory
- “Constraint Satisfaction Problems and Universal Algebra” (slides) Birmingham 2016
Midlands Graduate School in the Foundation of Computing Science
- “Permutability in diamonds” *Iowa State Algebra and Combinatorics Seminar* Ames 2016
- “Which commutative idempotent binars are tractable?” (slides) Nashville 2015
Vanderbilt Shanks workshop: Open Problems in Universal Algebra
- “Some small finite algebras yielding tractable CSP templates” Ames 2015
Iowa State Algebra and Combinatorics Seminar
- “Algebraic CSP and tractability of commutative idempotent binars” (slides) Denton 2015
BLAST Conference, University of North Texas
- “Isotopic algebras” *Iowa State Algebra and Combinatorics Seminar* Ames 2015
- “What does a nonabelian group sound like?” (slides) Baltimore 2014
MAA Special Session: At the Intersection of Mathematics and the Arts
- “Interval enforceable properties of finite groups” (slides) Louisville 2013
AMS Special Session on Finite Universal Algebra
- “Tutorial: UACalc at the command line and in the cloud” Louisville 2013
Workshop on Computational Universal Algebra
- “Approximating eigenvalues of large stochastic matrices” Columbia 2013
University of South Carolina Combinatorics Seminar
- “Congruence lattices of finite algebras” (plenary lecture) (slides) Orange 2013
BLAST Conference, Chapman University
- “Transposition principles for subgroups and equivalence relations” (slides) Asheville 2013
Zassenhaus Group Theory Conference
- “Isotopic algebras with nonisomorphic congruence lattices” (slides) Boulder 2013
AMS Special Session on Algebras, Lattices, and Varieties
- “Synchronizing Automata and the Černý Conjecture” (slides) Boulder 2013
Graduate Algebra Seminar, University of Colorado
- “The finite lattice representation problem in four parts” Columbia 2012
University of South Carolina Algebra and Logic Seminar
- “Interval sublattice enforceable properties of finite groups” (slides) Columbus 2012
The 31st Ohio State-Denison Mathematics Conference
- “Expansions of finite algebras and their congruence lattices” (slides) Honolulu 2012
American Mathematical Society sectional meeting
- “Intervals in subgroup lattices and permutation representations of finite groups” Cullowhee 2012
Western Carolina University Group Theory Seminar
- “Recent progress on the finite lattice representation problem” Honolulu 2011
Achievement Rewards for College Scientists: Scholar Presentations
- “The finite lattice representation problem” Seoul 2009
Joint Meetings of the Korean and American Mathematical Societies

SYNERGISTIC
ACTIVITIES

Organizer: *Workshop on Computational Universal Algebra* Louisville 2013
Referee for math journals: *Algebra Universalis*, *Order*, and *J. Logic & Analysis* 2012–present
Founder/editor: universalalgebra.org 2013–present

Iowa State University

REU mentor for Charlotte Aten (mathematics major, University of Rochester) Summer 2016
Honors thesis mentor for Joshua Thompson (mathematics major, honors program) 2015–2016
Putnam Exam mentor at weekly exam practice meetings 2014–2015
Iowa High School Math Contest volunteer proctor 2015
Undergraduate Tea cohost of weekly undergraduate student gatherings 2014–2015
Iowa 4-H Youth Conference volunteer mentor ([link](#)) 2015, 2016

University of South Carolina

Honors thesis mentor for Matthew Corley (computer science major, honors program) 2013–2014
South Carolina High School Math Contest exam design committee 2012–2014
Faculty mentor for Pi Mu Epsilon (math honors society) 2012–2014

REFERENCES

Clifford Bergman*

Barbara J. Janson Professor & Chair
Iowa State University
396 Carver Hall
Ames, Iowa 50011
phone: 515-294-1752
email: cbergman@iastate.edu

Ralph Freese

Professor of Mathematics
University of Hawaii
2565 McCarthy Mall
Honolulu, HI 96822
phone: 808-956-4680
email: ralph@math.hawaii.edu

Peter Jipsen

Professor of Mathematics
Chapman University
545 W. Palm Ave
Orange, CA 92866
phone: 714-744-7918
email: jipsen@chapman.edu

George McNulty

Professor of Mathematics
University of South Carolina
1523 Greene Street
Columbia, SC 29208
phone: 803-777-7469
email: mcnulty@math.sc.edu

J.B. Nation

Emeritus Professor of Mathematics
University of Hawaii
2565 McCarthy Mall
Honolulu, HI 96822
phone: 808-956-4680
email: jb@math.hawaii.edu

Bill Lampe*

Emeritus Professor of Mathematics
University of Hawaii
2565 McCarthy Mall
Honolulu, HI 96822
phone: 808-956-4680
email: bill@math.hawaii.edu

* teaching reference