

# David Meyer

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## Curriculum Vitae

### Research Interests

Finite-dimensional algebras, persistent homology, topological data analysis, modular representation theory, group cohomology, universal deformation rings.

### Positions

- 2021-present **Visiting Assistant Professor**, *Colgate University*.
- 2018-2021 **Lecturer (Visiting Assistant Professor)**, *Smith College*.
- 2015-2018 **Postdoctoral Fellow**, *University of Missouri*.  
*Mentor: Calin Chindris*

### Education

- 2015 **PhD Mathematics**, *University of Iowa*.  
*Title: Universal deformation rings and fusion*  
*Advisor: Frauke Bleher*
- 2006 **MA Mathematics**, *Indiana University*.
- 2001 **BS Mathematics**, *University of Hawaii*.

### Papers

- B. Collins, D. Meyer, *Rank characters for generalized persistence modules*, In preparation.
- O. Acharya, S. Li, D. Meyer, J. Noory, *Tracking the variety of interleavings*, (arXiv:2010.13199 [math.AT]), In preparation.
- K. Meehan, D. Meyer, *Persistence and stability of the  $\mathbb{A}_n$  quiver* (arXiv:2001.06172 [math.AT]), In preparation.
- D. Meyer, R. Soto, D. Wackwitz, *Universal deformation rings of modules for generalized Brauer tree algebras of polynomial growth*, (arXiv:2004.11811 [math.RT]), Submitted.
- K. Meehan, D. Meyer, *Interleaving distance as a limit*. (arXiv:1710.11489v1 [math.AT]), Submitted.
- K. Meehan, D. Meyer, *An Isometry theorem for generalized persistence modules* (arXiv:1710.02858v1 [math.AT]), Submitted.
- D. Meyer, *Universal deformation rings for extensions of finite subgroups of  $GL_2(\mathbb{C})$*  (arXiv:1602.03164 [math.RA]), Submitted.
- D. Meyer, *Universal deformation rings and fusion*, *Journal of Algebra*, 417 (2014), pp. 275-289.

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## Awards and Recognition

- Dr. Bor-Luh Lin Award (outstanding PhD thesis in Mathematics), University of Iowa, 2015
- Catherine Wegner Outstanding Mathematics TA Award, University of Iowa, 2013
- NSF VIGRE Fellowship, Indiana University, 2002-2005
- Robert E. Weber Memorial Award (performance on qualifying exams), Indiana University, 2003
- Dorothy Koehler Reed Memorial Scholarship, University of Hawaii, 2001

## Conference/Invited Talks

- *Rank of convex modules*  
AMS Sectional Meeting, October 2021
- *Tracking the variety of interleavings*  
Seventh Conference on Geometric Methods in Representation Theory, November 2019
- *The variety of interleavings*  
Kyoto Institute for Advanced Studies, August, 2019
- *Algebraic stability for arbitrary orientations of  $\mathbb{A}_n$*   
Sixth Conference on Geometric Methods in Representation Theory, November 2018
- *Representations of incidence algebras and generalized persistence modules*  
BIRS-CMO Multiparameter Persistent Homology Workshop, August 2018
- *Representations of quivers and the shape of finite data sets*  
Departmental Colloquium, Smith College, May 2018
- *Representations of posets and the topology of data sets*  
Departmental Colloquium, Bucknell University, May 2018
- *Some algebraic stability theorems*  
Applied Algebraic Topology Research Network Seminar, (online) January 2018
- *Generalized persistence modules and taking limits*  
AMS MAA Joint Meetings, January 2018
- *An isometry theorem for incidence algebras*  
Fifth Conference on Geometric Methods in Representation Theory, November 2017
- *Finite subgroups of  $GL_2(\mathbb{C})$  and universal deformation rings*  
Fourth Conference on Geometric Methods in Representation Theory, November 2016
- *Universal deformation rings and finite subgroups of  $GL_2(\mathbb{C})$*   
AMS Sectional Meeting, October 2016
- *Universal deformation rings and groups with faithful irreducible complex representations*  
International Conference on Representations of Algebras, August 2016
- *Incidence-like algebras*  
AMS MAA Joint Meetings, January 2016
- *Representations of finite subgroups of  $GL_2(\mathbb{C})$  and universal deformation rings*  
AMS MAA Joint Meetings, January 2015

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- *Universal deformation rings for extensions of finite subgroups of  $GL_2(\mathbb{C})$*   
Third Conference on Geometric Methods in Representation Theory, November 2014
- *Universal deformation rings for representations of subgroups of  $GL_2(\mathbb{F}_p)$*   
Maurice Auslander Distinguished Lectures and International Conference, April 2014
- *Universal deformation rings and fusion*  
AMS MAA Joint Meetings, January 2014
- *Universal deformation rings in extensions corresponding to faithful representations*  
Second Conference on Geometric Methods in Representation Theory, November 2013
- *Do universal deformation rings recognize fusion?*  
AMS Sectional Meeting, April 2013
- *Do universal deformation rings recognize fusion?*  
Maurice Auslander Distinguished Lectures and International Conference, April 2013
- *Universal deformation rings and fusion*  
First Conference on Geometric Methods in Representation Theory, November 2012

## Conferences and Seminars Organized

- Hudson River Undergraduate Math Conference, Keene State College (virtual conference), co-organizer, April 2021
- Women in Mathematics in New England (WIMIN), Smith College (virtual conference), co-organizer, October 2020
- Hudson River Undergraduate Math Conference, Mount Holyoke College, co-organizer, March 2020 (canceled due to COVID-19)
- Hudson River Undergraduate Math Conference, Smith College, co-organizer and local organizer, March 2019
- Topological Data Analysis Reading Group, Smith College, co-organizer, Fall 2018
- Fifth Conference on Geometric Methods in Representation Theory, University of Iowa, co-organizer, November 2017
- Fourth Conference on Geometric Methods in Representation Theory, University of Missouri, co-organizer, November 2016
- Representation Theory of Algebras Reading Seminar, University of Missouri, organizer Fall 2015-2016
- Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, founder 2011, organizer 2011-2015

## Selected Seminar Talks

- *IVP functions*  
Math Seminar, Fitchburg State College, April 2020
- *Making sense of divergent sums*  
Math Lunch, Smith College, February 2020

- *Functions that satisfy the intermediate value property*  
Math Lunch, Smith College, October 2019
- *Ultrafilters on  $\mathbb{N}$  and prime ideals*  
Math Lunch, Smith College, February 2019
- *Persistence modules for arbitrary orientations of  $\mathbb{A}_n$*   
Algebra/Topology Seminar, SUNY Albany, October 2018
- *Topological data analysis and representations of posets*  
Algebra Seminar, University of Iowa, October 2017
- *The spectrum of the power set of the natural numbers and taking limits*  
Graduate Student Algebra Seminar, University of Missouri, September 2016
- *Candidates for robust invariants for generalized persistence modules*  
Representation Theory of Algebras Reading Seminar, University of Missouri, February 2016
- *Fusion in group theory and a function into local rings*  
Graduate Student Algebra Seminar, University of Missouri, November 2015
- *$I$  spaces of finite representation type*  
Representation Theory of Algebras Reading Seminar, University of Missouri, October 2015
- *The function  $R(\Gamma, -)$*   
Algebra Seminar, University of Iowa, March 2015
- *The image of a function into  $\widehat{C}$*   
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, February 2015
- *The no loops conjecture*  
Algebra Seminar, University of Iowa, December 2014
- *Valuation rings and bezout rings*  
Commutative Ring Theory Seminar, University of Iowa, November 2014
- *Finite subgroups of  $GL_2(\mathbb{C})$  and the deformation functor*  
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, September 2014
- *An exact sequence in group homology*  
Algebra Seminar, University of Iowa, February 2014
- *On fusion categories*  
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, February 2014
- *Universal deformation rings in faithful extensions*  
Algebra Seminar, University of Iowa, November 2013
- *Group cohomology and the program for exhaustion*  
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, November 2013
- *Connections between group cohomology and fusion*

Algebra Seminar, University of Iowa, March 2013

- *Cohomology and fusion*  
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, February 2013
- *Second cohomology and fusion in dihedral groups*  
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, November 2012
- *A cohomological computation*  
Algebra Seminar, University of Iowa, September 2012
- *On group cohomology and extensions by elementary abelian groups*  
Graduate Student Group Representation/Group Cohomology Seminar, University of Iowa, April 2012
- *Exact couples and group cohomology*  
Algebra Seminar, University of Iowa, March 2012
- *Ordinary and modular representation theory*  
Algebra Seminar, University of Iowa, September 2011
- *Generalizing infinite sums*  
GAUSS Seminar, University of Iowa, April 2011

## Workshops, Summer Schools and Visits

- Visitor to the Kyoto Institute of Advanced Studies, Summer 2019
- Workshop on Multiparameter Persistent Homology, BIRS-CMO, Summer 2018
- PIMS Workshop on Geometric & Topological Aspects of the Representation Theory of Finite Groups, UBC, Summer 2016
- Summer Graduate School on Geometric Group Theory, MSRI, Summer 2015

## Students Mentored in Research

- Wenqin Chen, AB, Smith College
- Ojaswi Acharya, AB, Smith College
- Stella Li, AB, Smith College
- Jasmine Noory, Postbacc, Smith College
- Killian Meehan, PhD, the University of Missouri
- Katelyn Gutteridge, MA, the University of Missouri

## Thesis Committees

- Thesis advisor for Wenqin Chen, Honors Thesis (highest honors), Smith College, Spring 2020
- Committee member for Killian Meehan, PhD Committee, the University of Missouri, Spring 2018
- Thesis advisor for Katelyn Gutteridge, MA Committee, the University of Missouri, Spring 2018

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- Committee member for Dan Kline, PhD Committee, the University of Missouri, Spring 2016

## ■ Courses Coordinated

- Calculus II, Smith College, Fall 2020

## ■ Courses Taught

- Calculus III, Colgate University, Fall 2021
- Calculus II, Colgate University, Fall 2021
- Introduction to Measure Theory (Special Studies), Smith College, Spring 2021
- Introduction to Modern Algebra, Smith College, Spring 2021
- Calculus II, Smith College, Spring 2021
- Calculus II, Smith College, Interterm 2021
- Calculus II, Smith College, Fall 2020
- Quantum Group Theory (Special Studies), Smith College, Fall 2020
- Graph Theory, Smith College, Spring 2020
- Calculus II, Smith College, Spring 2020
- Honors Project, Smith College, Spring 2020
- Multivariable Calculus, Smith College, Fall 2019
- Calculus II, Smith College, Fall 2019
- Quantum Cryptography (Special Studies), Smith College, Fall 2019
- Topics in Abstract Algebra, Smith College, Spring 2019
- Introduction to Modern Algebra, Smith College, Spring 2019
- Calculus I, Smith College, Fall 2018
- Discrete Mathematical Structures, University of Missouri, Spring 2018
- Calculus III, University of Missouri, Spring 2018
- The Theory of Numbers, University of Missouri, Fall 2017
- Discrete Mathematical Structures, University of Missouri, Fall 2017
- Calculus III, University of Missouri, Spring 2017
- Higher Algebra, University of Missouri, Fall 2016
- Discrete Mathematical Structures, University of Missouri, Fall 2016
- Matrix Theory, University of Missouri, Spring 2016
- Calculus III, University of Missouri, Fall 2015
- Calculus I, University of Iowa, Fall 2014
- Elementary Functions, University of Iowa, Spring 2013

- Finite Mathematics, Indiana University, Fall 2005

## ■ Recitation Sections Taught

- Calculus II, University of Iowa, Summer 2014
- Calculus for the Biological Sciences, University of Iowa, Spring 2014
- Engineering Math I, University of Iowa, Fall 2013
- Introduction to Abstract Algebra (undergraduate level), University of Iowa, Fall 2012
- Calculus for the Biological Sciences, University of Iowa, Spring 2012
- Calculus I, University of Iowa, Fall 2011
- Engineering Math II: Multi-variable Calculus, University of Iowa, Spring 2011
- Calculus I, University of Iowa, Fall 2010
- Mathematics for the Biological Sciences, University of Iowa, Fall 2009
- Honors Finite Math, Indiana University, Spring 2006