

**Michael K. Brown**  
CURRICULUM VITAE

**Citizenship:** United States

**E-mail:** mkb0096@auburn.edu

**Education:**

Ph.D. in Mathematics, University of Nebraska-Lincoln, 2015

Advisor: Mark E. Walker

Dissertation Title: *Knörrer Periodicity and Bott Periodicity*

M.S. in Mathematics, University of Nebraska-Lincoln, 2012

B.S. with Highest Honors, University of Wisconsin-La Crosse, 2009

Majors: Mathematics and Philosophy

Minor: Computer Science

**Employment:**

- Auburn University  
Assistant Professor, 2020 -
- University of Wisconsin-Madison  
Van Vleck Visiting Assistant Professor, 2017 - 2020
- Hausdorff Center for Mathematics, Bonn, Germany  
Postdoc, 2015 - 2017

**Publications and Preprints:**

- *Tate resolutions on toric varieties* (with D. Erman), submitted.
- *Minimal free resolutions of differential modules* (with D. Erman), submitted.
- *A proof of a conjecture of Shklyarov* (with M.E. Walker), to appear in the Journal of Noncommutative Geometry.
- *Standard Conjecture D for matrix factorizations* (with M.E. Walker), *Advances in Mathematics* 366 (2020), 107092.
- *On the topological K-theory of twisted equivariant perfect complexes* (with T. Moulinos), submitted.
- *A Chern-Weil formula for the Chern character of a perfect curved module* (with M.E. Walker), *Journal of Noncommutative Geometry* 14(2) (2020), 709–772.
- *Topological K-theory of equivariant singularity categories* (with T. Dyckerhoff), *Homology, Homotopy and Applications* vol. 22(2) (2020), 1–29.
- *Adams operations on matrix factorizations* (with C. Miller, P. Thompson, and M.E. Walker), *Algebra & Number Theory* 11-9 (2017), 2165–2192.
- *On a conjecture of Dao-Kurano*, *Journal of Algebra* 490 (2017), 462–473.
- *Cyclic Adams operations* (with C. Miller, P. Thompson, and M.E. Walker), *Journal of Pure and Applied Algebra* 221 (2017), no. 7, 1589–1613.

- *Knörrer periodicity and Bott periodicity*, Documenta Mathematica 21 (2016), 1459–1501.

**Software:**

- *Computing Schur complexes* (with H. Huang, R. P. Laudone, M. Perlman, C. Raicu, S. Sam, and J. P. Santos), Journal of Software for Algebra and Geometry 9-2 (2019), 111–119.

**Conference Talks:**

- AMS Sectional Meeting, Homological Methods in Commutative Algebra, Creighton University (virtual), 2021
- AMS Sectional Meeting, Commutative Algebra and its Interaction with Algebraic Geometry and Combinatorics, Georgia Tech University (virtual), 2021
- RRAGE: Ragnar’s Ramifications in Algebra and Geometry Emerging, Fields Institute, Toronto, 2019
- Maurice Auslander Distinguished Lectures and International Conference, Cape Cod, Massachusetts, 2019
- Matrix Factorizations and Mirror Symmetry, Korea Institute for Advanced Study, Seoul, 2018
- Stable Cohomology: Foundations and Applications, Snowbird, Utah, 2018
- Matrix Factorisations and Related Topics, ICMS, Edinburgh, July 2017
- Workshop on Matrix Factorizations and Related Topics, Kavli IPMU, University of Tokyo, 2016
- Opening Perspectives in Algebra, Representations, and Topology, Centre de Recerca Matemàtica, Barcelona, 2015
- Commutative Algebra and Related Topics 2015, University of Kansas, 2015
- AMS Sectional Meeting, Singularities: Algebraic and Analytic Aspects, Georgetown University, 2015
- KUMUNU 2014, University of Missouri, 2014

**Seminar Talks:**

- University of South Carolina, Algebra, Geometry, and Number Theory Seminar, 2022
- University of Nebraska, Commutative Algebra Seminar, 2021
- University of Wisconsin, Algebra and Algebraic Geometry Seminar, 2021
- University of Minnesota, Commutative Algebra Seminar, 2021
- MSRI “Fellowship of the Ring” Virtual Commutative Algebra Seminar, 2020
- University of Notre Dame, Algebraic Geometry/Commutative Algebra Seminar, 2020
- Iowa State University, Algebra and Geometry Seminar, 2019
- University of Illinois at Urbana-Champaign, Algebraic Geometry Seminar, 2019
- Northeastern University, Representation Theory and Related Topics Seminar, 2019

- University of Utah, Commutative Algebra Seminar, 2018
- University of Illinois at Chicago, Algebraic  $K$ -theory Seminar, 2017
- University of Nebraska, Commutative Algebra Seminar, 2017
- Universität Bielefeld, Representation Theory Seminar, 2016
- University of Utah, Commutative Algebra Seminar, 2015
- University of Copenhagen, Algebra/Topology Seminar, 2015
- Northeastern University, Representation Theory and Related Topics Seminar, 2014
- Harvard University, Thursday Seminar, 2014
- UCLA, Algebra Seminar, 2014
- University of Toronto, Homological Methods Seminar, 2014
- Syracuse University, Algebra Seminar, 2014

**Master's Theses Supervised:**

- Robert Dixon, degree expected Spring 2022.

**Courses Taught at Auburn University:**

- Algebra II, Spring 2022
- Introduction to Algebraic Geometry, Fall 2021
- Algebra I, Fall 2021
- Commutative Algebra, Spring 2021
- Linear Algebra, Spring 2021
- Introduction to Abstract Algebra I, Fall 2020

**Courses Taught at the University of Wisconsin:**

- Homological Algebra, Spring 2020
- Modern Algebra II, Fall 2019
- Multivariable Calculus, Fall 2018
- Independent Study (topic: Commutative Algebra), Spring 2018
- Modern Algebra I, Spring 2018, Fall 2017

**Courses Taught at the University of Nebraska:**

As the primary instructor:

- Introduction to Modern Algebra, Summer 2015
- Applied Calculus, Spring 2015
- Multivariable Calculus, Fall 2013

- College Algebra, Spring 2012, Fall 2012

As a TA:

- Calculus 2, Summer 2011, Fall 2010
- Calculus 1, Spring 2011, Fall 2011

**Grants:**

- NSF Grant, “KUMUNUjr 2014,” March 2014 – February 2015, \$6,600; I was Co-PI on this grant, along with Jason Lutz (Co-PI) and Mark Walker (PI)

**Service:**

- Organizer for the Auburn University Algebra Seminar (2021 - present)
- Co-organizer for AMS Fall Central Sectional special session entitled “Homological and Characteristic  $p > 0$  Methods in Commutative Algebra”, University of Wisconsin-Madison, September 2019 (co-organized with Eric Canton)
- Co-organizer for week-long summer school entitled “Derived Noncommutative Geometry”, Hausdorff Center for Mathematics in Bonn, Germany, Summer 2017 (co-organized with Anthony Blanc and Tobias Dyckerhoff)
- Co-organizer for KUMUNUjr, an annual NSF-funded conference for graduate students and post-docs in commutative algebra in the Midwest; 2013, 2014 (co-organized with Amanda Croll, Courtney Gibbons, and Jason Lutz in 2013, and with Jason Lutz in 2014)