Ashley K. Wheeler   Curriculum Vitae

Last updated: February 15, 2023

CITIZENSHIP   USA

CONTACT
School of Mathematics   Email:
Georgia Institute of Technology   wheeler@math.gatech.edu
686 Cherry Street
Atlanta, GA 30332-0160, USA

INTERESTS   Combinatorial Commutative Algebra, Commutative Algebra, Algebraic Geometry

POSITIONS

Georgia Institute of Technology

    Visiting Assistant Professor
    August 2021 - present

Mount Holyoke College

    Visiting Lecturer in Mathematics
    July 2018 - June 2021

James Madison University

    Visiting Assistant Professor
    August 2017 - July 2018

University of Arkansas

    Visiting Assistant Professor
    August 2014 - May 2017

EDUCATION

University of Michigan

    Ph.D. in Mathematics, 2014
    ○ Thesis: *Ideals Generated by Principal Minors*
    ○ Advisor: Mel Hochster
    (Embedded) M.S. in Mathematics, 2011

Kansas State University

    B.S. in Mathematics, 2008
    ○ McNair Scholar
    ○ Finalist, Distinguished Undergraduate Student in Research
    ○ Nominee, Barry M. Goldwater Scholarship

United States Air Force Academy

    ○ Attended 2003-2004, honorable discharge.
    ○ Transferred to Kansas State University.

<table>
<tr><td>Papers</td><td>

Toric and tropical Bertini theorems in positive characteristic, joint with F. Gandini, M. Hering, D. Maclagan, F. Mohammadi, J. Rajchgot, and J. Yu. (arXiv:2111.13214)

Geometric equations for matroid varieties, joint with J. Sidman and W. Traves. J. Combin. Theory Ser. A **178** (2021), Paper No. 105360, 15 pp. MR4175891. (arXiv:1908.01233v3)

The sandpile group of a thick cycle graph, joint with D. Alar, J. Celaya, M. Henson, L. García Puente. *Electron. J. Graph Theory Appl. (EJGTA)* **10** (2022), no. 2, 625–636. MR4506161. (arXiv:1710.06006)

Finiteness of associated primes of local cohomology modules over Stanley-Reisner rings, joint with R. Barrera and C. Madsen. (arXiv:1609.05366)

Principal minor ideals and rank restrictions on their vanishing sets, J. Algebra **469** (2017), 267–287. MR3563014. (arXiv:1503.05799)

Ideals generated by principal minors, Illinois J. Math. **59** (2015) no. 3, 675–689. MR3554228. (arXiv:1410.1910)

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<tr><td>Invited talks</td><td>

Toric varieties given by principal 2-minor ideals
- AMS Special Session on Topological and Combinatorial Methods in Commutative Algebra, Joint Math Meetings, Boston, MA. (January 2023)

Toric and tropical Bertini theorems in positive characteristic
- AWM Workshop: Women in Commutative Algebra (WiCA), Joint Math Meetings, Boston, MA. (January 2023)
- AWM Symposium (virtual). (June 2022)
- TATERS seminar, Boise State (virtual). (April 2022)
- AWM Workshop: Women in Algebraic Geometry (WiAG), Joint Math Meetings (virtual). (April 2022)
- MSRI Special Session on the MSRI African Diaspora Joint Mathematics Workshop (ADJOINT), Joint Math Meetings (virtual). (April 2022)
- MSRI Special Session on Combinatorial and Homological Methods in Commutative Algebra, Joint Math Meetings (virtual). (April 2022)
- Celebrating Diversity in Mathematics, AMS Sectional Meeting (virtual). (March 2022)
- AMS Sectional Meeting (virtual). (November 2021)

Geometric equations for matroid varieties
- Washington College math seminar. (November 2022)
- Emory University algebra seminar. (October 2021)
- Special Session on Commutative Algebra, AMS Sectional Meeting (virtual). (May 2021)

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- Special Session on Commutative Algebra, AMS Sectional Meeting (virtual). (April 2021)
- Special Session on Current Trends in Commutative Algebra, AMS Sectional Meeting (virtual). (March 2021)
- Commutative and Homological Algebra Market Presentations (CHAMP) Virtual Seminar, available on Youtube *(talk given to a more advanced audience)*. (January 2021)
- Special Session on Commutative Algebra, Joint Math Meetings (virtual). (January 2021)
- Virtual Inspiring Talk (VIT), available on Youtube *(talk given to an undergraduate audience)*. (November 2020)
- Special Session on Algebraic Singularities in Arbitrary Characteristic, AMS Sectional Meeting (virtual). (October 2020)
- *(Sectional cancelled due to COVID)* Special Session on Current Trends in Combinatorial Commutative Algebra, AMS Sectional Meeting, Tufts University, Medford, MA. (March 2020)
- *(Sectional cancelled due to COVID)* Special Session on Commutative Algebra, AMS Sectional Meeting, University of Virginia, Charlottesville, VA. (March 2020)
- Math/Stat Lunches, Mount Holyoke College, South Hadley, MA. (January 2020)
- Special Session on Oriented Matroids and Related Topics, AMS Sectional Meeting, Binghamton University, Binghamton, NY. (October 2019)

Classical projective geometry with matroid varieties, Discrete Math Seminar, Worcester Polytechnic Institute, Worcester, MA. (April 2019)

ASLs & posets, Discrete Math Seminar, University of Massachusetts, Amherst, MA. (February 2019)

Matroids and the bracket algebra
- Algebra Seminar, Kansas State University. (October 2018)
- Algebraic Geometry, Commutative Algebra and Number Theory Session, Women's Intellectual Network Research Symposium (WINRS), University of Virginia, Charlottesville, VA. (September 2018)

Principal minor ideals, Colloquium Talk at James Madison University, Harrisonburg, VA. (February 2018)

Why is Pappus's theorem interesting in modern Commutative Algebra?, Colloquium Talk at James Madison University. (October 2017)

Positroidal components of principal minor schemes, Special Session on Commutative Algebra: Interactions with Algebraic Geometry and Algebraic Topology, AMS Sectional Meeting, University of Central Florida, Orlando, FL. (September 2017)

Finiteness of associated primes of local cohomology modules over Stanley-Reisner rings
- KUMUNUjr, University of Nebraska, Lincoln, NE. (April 2017)
- NAM Granville-Brown-Haynes Session of Presentations by Recent Doctoral Recipients in the Mathematical Sciences, Joint Mathematics Meetings, Hyatt Regency Atlanta and Marriott Atlanta Marquis, Altanta, GA. (January 2017)
- *Local cohomology over Stanley-Reisner rings* (poster), KUMUNU, University of Kansas, Lawrence, KS. (October 2016)

Principal minor ideals with matroid theory, Special Session on Combinatorial and Computational Commutative Algebra and Algebraic Geometry, AMS Sectional Meeting, University of Utah, Salt Lake City, UT. (April 2016)

Ideals generated by principal minors
- Special Session on Recent Advances in Commutative Algebra, AMS Sectional Meeting, University of Memphis, Memphis, TN. (October 2015)
- Joint Mathematics Meetings, Baltimore Convention Center, Baltimore, MD. (January 2014)

Symplectic topology of Hamiltonian systems with one degree of freedom
- MKN (MO-KAN-NE) McNair Heartland Research Conference, Marriott Country Club Plaza Hotel, Kansas City, MO. (September 2007)
- The Pennsylvania State University McNair Summer Research Conference, Pennsylvania State University, State College, PA. (August 2007)

Duality in the Euclidean and projective planes, Young Mathematicians Conference (YMC), The Ohio State University, Columbus, OH. (August 2007)

WORKSHOPS   African diaspora joint mathematics workshop (ADJOINT): Adventures in constructive Galois theory, MSRI. (Summer 2021)

Women in commutative algebra (WICA): Toric and tropical Bertini theorems in prime characteristic, Banff International Research Station (BIRS), Alberta, Canada. (October 2019)

Invitation to Instittue of Advanced Study (IAS), Park City Mathematics Institute, Park City, UT. (Summer 2017)

Mathematics research communities (MRC): Local cohomology of Stanley-Reisner rings, Snowbird Resort, Utah. (Summer 2015)

Geometric equations for matroid varieties, SIAM Student Seminar, Georgia Tech. (November 2022)

Research mentor, Georgia Tech REU: Toric structure of principal 2-minor ideals, Georgia Institute of Technology. (Summer 2022)

Algebra Seminar, Georgia Tech
○ **Organizer**, Fall 2021-Spring 2022
○ *Geometric equations for matroid varieties* (October 2021)

Geometric equations for matroid varieties, Research Horizons seminar, Georgia Tech. (September 2021)

Organizing Committee, Discrete Math Days of the Northeast, Mount Holyoke College, South Hadley MA. (November 2019)

Faculty Advisor, Problem-Solving Club (Putnam), Mount Holyoke College. (Fall 2019)

Organizing Committee, Discrete Math Days of the Northeast, University of Massachusetts, Amherst, MA. (April 2019)

Judge, Holyoke Hackathon, Mount Holyoke College, South Hadley, MA. (November 2018)

Assistant Faculty Advisor, Problem-Solving Club (Putnam), Mount Holyoke College. (Fall 2018)

Organizer (with P. Thompson), Special Session on Homological Methods in Commutative Algebra, AMS Sectional Meeting, University of North Texas, Denton, TX. (September 2017)

Panelist and Representative of the Mathematical Sciences Research Institute (MSRI), Tenth Annual National Alliance for Doctoral Studies in the Mathematical Sciences Field of Dreams Conference, St. Louis, MO. (Fall 2016)

Local Supervisor, William Lowell Putnam Mathematical Competition, University of Arkansas, Fayetteville, AR. (Fall 2016)

Assistant Faculty Advisor, Math Club, University of Arkansas. (SY 2016-2017)

Postdoctoral Assistant, MSRI Undergraduate Program (MSRI-UP): Sandpile Groups, MSRI. (Summer 2016)

Assistant Faculty Advisor, Arkansas Women in Statistics and Math (AWSM), University of Arkansas. (SY 2014-2015)

Algebra Seminar, University of Arkansas

- *Local Cohomology of Stanley-Reisner Rings* (March 2016)
- *Local Cohomology and $\mathcal{D}$-modules* (September 2015)
- *Matroid Varieties* (February 2015)
- *Ideals Generated by Prinicpal Minors* (October 2014)

Divisors, Organized Mathematical Networking and Inquiry (OMNI), University of Arkansas. (October/November 2014)

Student Commutative Algebra Seminar, University of Michigan
- *Intro to Étale Extensions* (October 2013)
- *Introduction to Semigroup Rings* (April 2013)
- *Truncations and Polarization* (October 2012)
- *Classical Solid Projective Geometry* (March 2012)
- *Macaulay's Theorem and the EGH Conjecture* (November 2011)
- *Local Cohomology and $\mathcal{D}$-Modules* (October 2011)

Student Algebraic Geometry Seminar, University of Michigan
- *Proper Push-Forward and Flat Pullback for Chow Groups* (September 2012)
- *The Multiplier Ideal is a Test Ideal* (February 2011)

Graduate student teaching assistant, MSRI-UP: Coding theory, MSRI. (Summer 2009)

TEACHING	Sp 2023 **Professor**, *Algebra II: Intro to commutative algebra* (Georgia Tech, also Sp 2022)
	Fa 2022 **Professor**, *Linear algebra* (Georgia Tech)
	Fa 2021 **Professor**, *Intro to linear algebra* (Georgia Tech)
	Sp 2021 **Professor**, *Calculus II* (Mount Holyoke College, also Fa 2020, Fa 2019, Sp 2019, Fa 2018)
	Sp 2020 **Professor**, *Calculus III* (Mount Holyoke College)
	Sp 2020 **Professor**, *Calculus I* (Mount Holyoke College)
	Fa 2019 **Professor**, *Abstract Algebra: Ring Theory* (Mount Holyoke College)
	Sp 2019 **Professor**, *Abstract Algebra: Group Theory* (Mount Holyoke College)
	Fa 2018 **Professor**, *Discrete Mathematics* (Mount Holyoke College)
	Sp 2018 **Professor**, *Linear Algebra and Differential Equations* (James Madison University)
	Fa 2017 **Professor**, *Calculus I* and *Calculus II* (James Madison University)
	Sp 2017 **Professor**, *Calculus III* (University of Arkansas, also Fa 2015)
	Fa 2016 **Professor**, *Survey of Calculus* (University of Arkansas)
	Math 2043. Selected topics in elementary calculus and analytic geometry for students in business, agriculture, and social sciences.

Sp 2016 **Professor**, *Calculus I* (University of Arkansas, also Sp-Su 2015, Fa 2014)

Fa 2014 **Professor**, *Discrete Mathematics* (University of Arkansas)

Fa 2012 **Graduate Student Instructor (GSI)**, *Calculus II* (University of Michigan)

Fa 2010 **GSI**, *Calculus I* (University of Michigan)

Su 2010 **GSI**, *Differential Equations* (University of Michigan)

Fa 2009 **GSI**, *Data, Functions, and Graphs* (University of Michigan)
Math 105. Mathematical modeling of real-life problems using linear, polynomial, exponential, logarithmic, and trigonometric functions.

Su 2008 **Instructor**, *Graduate Records Examination (GRE) Preparation* (Kansas State University)
Course sponsored by the McNair Scholars Program. Quantitative Reasoning portion of the GRE.

COMPUTER SKILLS		
	Proficient:	LaTeX/TeX
	Experience:	Macaulay2, HTML, C, Sage, CSS, JavaScript, Mathematica, MATLAB, Maple

HONORS		
	2022	Mathematically Gifted and Black honoree
	2019	Visiting Faculty: Extended Offer (to SY 2020-2021), Mount Holyoke College
	2016	SACNAS Travel Scholarship to the National Diversity in STEM Conference
	2014	Visiting Assistant Professor: Extended Offer (to SY 2016-2017), University of Arkansas
	2014	AMS Travel Grant: AMS Sectional Meeting, University of New Mexico
	2014	AMS Travel Grant: Joint Mathematics Meetings, Baltimore Convention Center
	2008-11	Rackham Fellowship Award
		The Rackham Graduate School, University of Michigan
	2008	Outstanding Senior Award
		Mathematics Department, Kansas State University
	2008	1st Place Individual, Kansas Collegiate Mathematics Competition
		Mathematical Association of America (MAA) Kansas Section, Bethel College
	2007-08	I-Center Undergraduate Scholar Award
		Center for the Integration of Undergraduate, Graduate and Postdoctoral Research, Mathematics Department, Kansas State University
	2007	Scored 19, 68th William Lowell Putnam Mathematical Competition (Earned Fung's Achievement Award at Kansas State University for top score, 2007)

		Mathematical Association of America (MAA)
	2007	Successful, Mathematical Contest in Modeling (MCM)
		Consortium for Mathematics and Its Applications (COMAP)
	2006	2nd Place, The Eighth Annual S. Thomas Parker Mathematical Competition
		Mathematics Department, Kansas State University

OTHER CONFERENCES

Jul 2019	SIAM Conference on Applied Algebraic Geometry, Bern, Switzerland
Jun 2019	Ideals, Varieties, Applications: Celebrating the Influence of David Cox, Amherst College, Amherst, MA
Mar 2019	Algebraic Geometry Northeastern Series (AGNES), University of Massachusetts, Amherst, MA
Sep 2018	Discrete Math Days, University of Rhode Island, Kingston, RI
Mar 2017	Southwest Local Algebra Meeting (SLAM), University of New Mexico, Albuquerque, NM
Nov 2016	RTG Workshop on the Homological Conjectures in Commutative Algebra, University of Illinois, Chicago, IL
Oct 2016	Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, Long Beach, CA
Mar 2016	Southwest Local Algebra Meeting (SLAM), Texas State University, San Marcos, TX
Jan 2016	Joint Mathematics Meetings, Seattle, WA
Oct 2015	KUMUNU, University of Missouri, Columbia, MO
Mar 2015	Recent developments in positive characteristic techniques in commutative algebra: Frobenius Operators and Cartier Algebras, Atlanta, GA
Sep 2014	KUMUNU, University of Missouri, Columbia, MO
Apr 2014	AMS Sectional Meeting, University of New Mexico, Albuquerque, NM
Oct 2013	AMS Sectional Meeting, University of Louisville, Louisville, KY
Apr 2012	AMS Sectional Meeting, University of Kansas, Lawrence, KS
Apr 2011	Underrepresented Students in Topology and Algebra Research Symposium (USTARS), University of Iowa, Iowa City, IA
Oct 2009	SACNAS National Conference, Kansas City, MO
Mar 2008	Workshop and Combinatorics of Partitions and q-Series Conference, University of Florida, Gainesville, FL
Jan 2008	Joint Mathematics Meetings, San Diego Convention Center, San Diego, CA
Fall 2007	Mathematics Advanced Study Semesters (MASS) Program, Pennsylvania State University, State College, PA
Oct 2007	MSRI Workshop on Modern Mathematics and Society for Advancement of Chicanos and Native Americans in Science (SACNAS) National Conference, Kansas City, MO