

Rebecca R.G. (Rebhuhn-Glanz)

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Areas of specialisation

Commutative Noetherian rings, especially big Cohen-Macaulay modules and algebras, closure operations, and their relationship to classifying singularities. Free resolutions over commutative rings and Frobenius powers in characteristic $p > 0$.

Appointments held

2018- Assistant Professor, George Mason University
2016-2018 Philip T. Church Postdoctoral Fellow, Mentors: Claudia Miller and Graham Leuschke

Education

2011 BA/MA in Mathematics, Bryn Mawr College
2016 PhD in Mathematics, University of Michigan, Advisor: Mel Hochster

Grants, honors, & awards

2019 AMS-Simons Travel Grant
2019 CHSS Internal Award for Team-Taught Course on History of Mathematics
2018 MAA Project NExT Fellow
2017 AWM Travel Grant
2015 Participant, AMS Math Research Community on Commutative Algebra
2015 AMS Graduate Student Travel Grant
2011 NSF Graduate Research Fellowship

Publications & talks

MATHEMATICAL ARTICLES (* INDICATES WRITTEN WITH STUDENTS)

2016 *Closure operations that induce big Cohen-Macaulay modules and classification of singularities*, *J. Algebra*, 467, p. 237-267, arXiv:1512.06843.
2018a *F-singularities under generic linkage* (with Linqun Ma, Janet Page, William Taylor, and Wenliang Zhang), *J. Algebra*, 505, p. 194-210, arXiv:1607.03972.

- 2018b *Closure operations that induce big Cohen-Macaulay algebras*, *J. Pure Appl. Algebr.*, 222, p. 1878-1897, arXiv:1512.07862.
- 2019 *Big Cohen-Macaulay and seed algebras in equal characteristic zero via ultraproducts* (with Geoffrey D. Dietz), *textitJ. Commut. Algebr.*, 11, no. 4, p. 511-533, arXiv:1608.08193.
- 2021 *Closure-Interior Duality over Complete Local Rings* (with Neil Epstein), *Rocky Mountain J. Math*, 51, no. 3, p. 823-853, arXiv:1909.05739.
- 2021 **Cohen-Macaulay test ideals over rings of finite and countable Cohen-Macaulay type* (with Julian Benali and Shrinal Pothagani), *Involve*, 14, no. 3, p. 413-430, arXiv: 2103.02529.
- 2021 *Characteristic-free test ideals* (with Felipe Pérez), *Trans. Am. Math. Soc. Ser. B*, 8, p. 754-787, arXiv:1907.02150.
- 2022 *The resolution of (x^N, y^N, z^N, w^N) over the hypersurface $k[x, y, z, w]/(x^n + y^n + z^n + w^n)$* (with Andrew R. Kustin and Adela Vraciu), *J. Algebra*, 590, p. 338-393.
- accepted *Canonical resolutions over Koszul algebras* (with Eleonore Faber, Martina Juhnke-Kubitzke, Haydee Lindo, Claudia Miller, and Alexandra Seceleanu), to appear in a Springer volume on Women in Commutative Algebra, arXiv:2011.12409.
- submitted *Betti numbers of the Frobenius powers of the maximal ideal over a general hypersurface* (with Claudia Miller and Hamidreza Rahmati), submitted for publication, arXiv:1910.07565.
- submitted *Nakayama closures, interior operations, and core-bull duality* (with Neil Epstein and Janet Vassilev), submitted for publication, arXiv:2007.12209.
- submitted *Integral closure, basically full closure, and duals of nonresidual closure operations* (with Neil Epstein and Janet Vassilev), submitted for publication, arXiv:2109.08772.
- submitted *The syzygies of the ideal $(x_1^N, x_2^N, x_3^N, x_4^N)$ in the hypersurface ring defined by $(x_1^n + x_2^n + x_3^n + x_4^n)$* (with Andrew R. Kustin and Adela Vraciu), submitted for publication.

MATH EDUCATION ARTICLES

- submitted *GLAMS: Graduate Learning Assistants in Mathematical Sciences* (with Joanna G. Jauchen, Hannah Klawa, Long Nguyen, Evelyn Sander, Padmanabhan Seshaiyer, and Cigole Thomas), submitted for publication.

RESEARCH TALKS

- 2022 AMS Special Session on Commutative Algebra, Joint Mathematics Meetings, Online
- 2022 Combinatorics, Algebra, and Geometry Seminar, George Mason University, Fairfax, VA
- 2022 Special Session on Commutative Algebra, AMS Spring Southeastern Sectional Meeting, Charlottesville, VA (cancelled due to Covid-19)
- 2021 D-modules, Group Actions, and Frobenius: Computing on Singularities, ICERM, Online
- 2021 Special Session on Commutative Algebra, AMS Spring Central Sectional Meeting, Online
- 2020 Special Session on Homological Commutative Algebra, AMS Fall Southeastern Sectional Meeting, Online
- 2020 Special Session on Homological Methods in Algebra, AMS Fall Eastern Sectional Meeting, Online
- 2020 Special Session on Free Resolutions, Combinatorics, and Geometry, AMS Fall Central Sectional Meeting, Online
- 2020 CAZoom Conference – Virtually bringing together commutative algebra and related fields, Online
- 2020 Morgantown Algebra Days, West Virginia University, Morgantown, WV (cancelled due to Covid-19)
- 2020

- Special Session on Commutative Algebra, AMS Spring Southeastern Sectional Meeting, Charlottesville, VA (session held online)
- 2019 Commutative Algebra Seminar, University of Minnesota, Minneapolis, MN
- 2019 Special Session on Commutative Algebra, AMS Fall Eastern Sectional Meeting, Binghamton, NY
- 2019 Plenary Lecture, Graduate Workshop in Commutative Algebra for Women & Mathematicians of Other Minority Genders, University of Minnesota, Minneapolis, MN
- 2019 Research Session on Commutative Algebra, AWM Research Symposium, Houston, TX
- 2019 Special Session on Commutative Algebra and its Environs, AMS Spring Central and Western Joint Sectional Meeting, Oahu, HI
- 2018 Combinatorics, Algebra, and Geometry Seminar, George Mason University, Fairfax, VA
- 2018 Special Session on Commutative Algebra, AMS Fall Southeastern Sectional Meeting, Fayetteville, AR
- 2018 Special Session on Advances in Commutative Algebra, AMS Fall Central Sectional Meeting, Ann Arbor, MI
- 2018 Commutative Algebra Seminar, University of Utah, Salt Lake City, UT
- 2018 Special Session on Commutative Algebra, AMS Fall Eastern Sectional Meeting, Newark, DE
- 2018 Session on Algebraic Geometry, Commutative Algebra, and Number Theory, Women's Intellectual Network Research Symposium, University of Virginia, Charlottesville, VA
- 2018 Special Session on Homological Commutative Algebra, AMS Spring Eastern Sectional Meeting, Boston, MA
- 2018 AMS Special Session on Commutative Algebra in all Characteristics, Joint Math Meetings, San Diego, CA
- 2017 Structures on Free Resolutions Mini-Symposium, Texas Tech University, Lubbock, TX
- 2017 Special Session on Homological Methods in Commutative Algebra, AMS Fall Central Sectional Meeting, Denton, TX
- 2017 Wine and Cheese Talks, The Prospects for Commutative Algebra, Osaka, Japan
- 2017 Colloquium, Ithaca College, Ithaca, NY
- 2017 Special Session on Commutative Algebra, AMS Spring Southeastern Sectional Meeting, Charleston, SC
- 2017 AMS Special Session on An Amicable Combination of Algebra and Number Theory, Joint Math Meetings, Atlanta, GA
- 2016 Special Session on Recent Advances in Commutative Algebra, CMS Winter Meeting, Niagara Falls, Ontario, Canada
- 2016 Algebra Seminar, Syracuse University
- 2016 Route 81 Conference, Syracuse University, Syracuse, NY
- 2016 Special Session on Commutative Ring Theory, AMS Spring Central Sectional Meeting, Fargo, ND
- 2016 AMS Special Session on Commutative Algebra and its Interactions with Algebraic Geometry, Joint Math Meetings, Seattle, WA, January 2016
- 2015 Algebra Seminar, University of Texas at Austin, Austin, TX
- 2015 Commutative Algebra Seminar, Georgia State University, Atlanta, GA
- 2015 Special Session on Homological Methods in Commutative Algebra, AMS Fall Western Sectional Meeting, Fullerton, CA
- 2015 Special Session on Commutative Algebra, AMS Fall Central Sectional Meeting, Chicago, IL
- 2015 Kumunu Jr., University of Nebraska-Lincoln, Lincoln, NE
- 2015 Commutative Algebra Seminar, University of Michigan (twice)
- 2015

Special Session on Closure Operations in Commutative Algebra, AMS Spring Eastern Sectional Meeting, Washington, DC

2015 Commutative Algebra Seminar, University of Virginia, VA (twice)

Teaching

GEORGE MASON UNIVERSITY

Commutative Algebra (MATH 724, Spring 2021)
History of Mathematics (MATH 400, Spring 2021)
Linear Algebra (MATH 203, Fall 2021 and Fall 2020)
Graduate Algebra I (MATH 621, Fall 2021, Fall 2020, and Spring 2019)
History of Mathematics (MATH 400/HIST 375, Spring 2020)
Abstract Algebra (MATH 321, Fall 2019)
Geometry (MATH 302, Fall 2018)

SYRACUSE UNIVERSITY

Topics Course: Test Ideals (graduate level, Spring 2018)
Projective Geometry (upper level undergraduate, Spring 2018)
History of Math (upper level undergraduate, Fall 2017)
Calculus I for the Life Sciences (Fall 2017, Spring 2017)
Calculus I (Fall 2016)

UNIVERSITY OF MICHIGAN

Multivariable Calculus (Spring 2015)
Calculus 2 (Fall 2014)
Calculus I (Spring 2013, Fall 2012)

MENTORING

2019– PhD advisor, Heath Camphire.
2021 Project Leader, MEGL project with three undergraduates
2019-2020 Project Leader,
3-semester MEGL project with two undergraduates, Julian Benali and Shrunal Pothagoni.

PEDAGOGY TRAINING AS FACILITATOR

2021 Speaker on Using Active Learning in Graduate Classes, Teaching Conversations, George Mason University
2021 Facilitator, MD-DC-VA COMMIT Workshop, Online
2020 Apprentice Facilitator, MD-DC-VA IBL Consortium Workshop, Online
2020-2021 Trained Graduate Learning Assistants to run prelim practice sessions using active learning

PEDAGOGY TRAINING AS PARTICIPANT

2018-2019 MAA Project NExT Fellow
2017 Academy of Inquiry-Based Learning Workshop, De Paul University, Chicago, IL
2016 Graduate Teacher Certificate, University of Michigan, Ann Arbor, MI

Service

ORGANIZING

- 2022 Special Session on Celebrating Diversity in Mathematics, AMS Spring Southeastern Sectional Meeting, Charlottesville, VA (cancelled due to Covid-19)
- 2021 AMS Special Session on Commutative Algebra, Joint Mathematics Meetings, Online
- 2020 Special Session on Celebrating Diversity in Mathematics, AMS Spring Southeastern Sectional Meeting, Charlottesville, VA (postponed due to Covid-19)
- 2018 Session on Algebraic Geometry, Commutative Algebra, and Number Theory Session, Women's Intellectual Network Research Symposium, University of Virginia, Charlottesville, VA
- 2016-2018 Commutative Algebra Learning Seminar, Syracuse University
- 2014-2016 Student Commutative Algebra Seminar, University of Michigan
- 2008-2010 Distressing Math Collective (student math seminar), Bryn Mawr College

DIVERSITY AND INCLUSION

- 2022 Organizer, Panel on "How can we concretely support members of groups underrepresented in mathematics?", AMS Spring Southeastern Sectional Meeting, Charlottesville, VA (cancelled due to Covid-19)
- 2020 Panelist, Career Panel for Association for Women in Mathematics, Syracuse University Chapter
- 2020 Co-organizer and mentor, mentoring program for new math PhD students at GMU
- 2020 Organizer, Panel on "How can we concretely support members of groups underrepresented in mathematics?", AMS Spring Southeastern Sectional Meeting, Charlottesville, VA (postponed due to Covid-19)
- 2016- Mentor, National Alliance for Doctoral Studies in the Mathematical Sciences
- 2016 Invited Graduate Student Panelist, Nebraska Conference for Undergraduate Women in Mathematics, University of Nebraska, Lincoln, NE
- 2014-2016 Organizer, Women in Math Club, University of Michigan
- 2013 Teaching Assistant, Summer Program for Women in Math, George Washington University, Washington, DC

COLLEGE-LEVEL SERVICE

- 2020-2021 Chair, Nominations Committee, College of Science, George Mason University, Fairfax, VA
- 2019-2020 Nominations Committee, College of Science, George Mason University, Fairfax, VA

DEPARTMENTAL SERVICE

- 2022 Organizer, PhD Launchpad program for incoming math PhD students, Department of Mathematical Sciences, George Mason University, Fairfax, VA
- 2022- Diversity Committee, Department of Mathematical Sciences, George Mason University, Fairfax, VA
- 2021- Graduate Committee, Department of Mathematical Sciences, George Mason University, Fairfax, VA
- 2018-2021 Algebra Prelim Committee, Department of Mathematical Sciences, George Mason University, Fairfax, VA

COMMUNITY ENGAGEMENT

- 2021 Mathematics Graduate Seminar, George Mason University, Fairfax, VA
- 2017 Undergraduate Math Club, Utica College, Utica, NY
- 2017 Math and Computer Science Seminar, Adelphi University, Garden City, NY
- 2016 Undergraduate Math Club, Syracuse University, Syracuse, NY
- 2014,2016 Teaching Assistant, Michigan Math and Science Scholars, University of Michigan, Ann Arbor, MI
- 2012-2014 Math Circle, University of Michigan, Ann Arbor, MI
- 2012-2016 Graduate Student Mentor, University of Michigan, Ann Arbor, MI
- 2013,2015 Undergraduate Math Club, University of Michigan, Ann Arbor, MI

OTHER SERVICE

Referee: Journal of Algebra, Punjab University Journal of Mathematics, American Mathematical Monthly, Communications in Algebra, Journal of Algebra and its Applications
Reviewer: AMS Mathematical Reviews, Zentralblatt Math

Professional Memberships

- 2016– Association for Women in Mathematics
- 2010– American Mathematical Society
- 2018– Mathematical Association of America