

YOUNGSU KIM

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Academic Positions

- Assistant Professor, California State University San Bernardino, Aug 2020 – present.
- Visiting Assistant Professor, University of Arkansas, Fayetteville, Aug 2017 – July 2020.
- Visiting Assistant Professor, University of California, Riverside, Sep 2014 – Jun 2017.

Education

- Ph.D. in Mathematics, Purdue University, Aug 2014, advisor: Professor Bernd Ulrich.
- B.S. in Mathematics, Summa Cum Laude, Korea Advanced Institute of Science and Technology (KAIST), Feb 2006.

Research Interests

- Commutative Algebra and Algebraic Geometry; MSC 13, 14: Blow-ups and its Related Topics, Linkage, Closure Operations, Multiplicities, Log Canonical Threshold, and Macaulay2 Programming.

Teaching Awards

- Outstanding Visiting Assistant Professor, Department of Mathematics, University of California, Riverside, 2016-17.
- Excellence in Teaching Award, Department of Mathematics, Purdue University, 2012-13.
- Committee for the Education of Teaching Assistants (CETA) Teaching Award, Purdue University, 2012-13

Academic Awards

- 2018-2019 University of Arkansas Deans' Office Travel Grant.
- AMS Graduate Student Travel Grants, Fall 2013, Spring 2014.
- Member (Program Associate), MSRI, Spring 2013.
- MSRI Workshop Travel Grants, Fall 2012, Spring 2013.
- Purdue Research Foundation Fellowship, Spring 2010.
- Purdue Research Foundation Summer Fellowships, Summer 2008, 2009.

Professional Activities/Service/Membership/Mentoring

- Co-organizer of a special session at the AMS Meeting in Georgia Tech., Atlanta, March 2021.
- Reading courses with a graduate student on commutative algebra, Fall 2019, Spring 2020.
- Teaching assistant for the undergraduate workshop for the Thematic Program in Commutative Algebra and its Interaction with Algebraic Geometry at the University of Notre Dame, May 2019.
- Co-organizer of a special session at the AMS Meeting in Loyola University, Chicago, Oct 2015.

- Referee for Journal of Algebra, Journal of Pure and Applied Algebra, Journal of Algebra and Its Applications, Journal of Commutative Algebra, Proceedings of the AMS, and Honam Math. Journal, PUMP Journal of Undergraduate Research.
- Reviewer for Mathscinet.
- Member, American Mathematical Society, 2006-Present.
- Author of the jMult package designed to compute invariants related to the j -multiplicity.
<https://sites.google.com/site/jmultiplicity/>
- Purdue University, Organizer of the Student Commutative Algebra Seminar, 2010-2012.
- Purdue University, Graduate Students Representative, 2010-2011.
- University of California, Riverside, Recommendation letters for undergraduate students.

Publications

In Journals

1. With Lance E. Miller, Wenbo Niu, *Log canonical thresholds of generic links of determinantal varieties*, Proc. Amer. Math. Soc. **149** (2021), 2777–2787.
2. With Vivek Mukundan *Equation defining certain graphs*, Michigan Mathematical Journal **69** (2020) 675–710.
3. With Andy Walker, *A note on non-Noetherian Cohen-Macaulay rings*, Proc. Amer. Math. Soc. **148** (2020), 1031-1042
4. With Louis J. Ratliff and David Rush *A Note on Itoh (e)-valuation Rings of an Ideal*, Journal of Algebra **498** (2018), 47–70.
5. With Justin Chen, *Graded-irreducible Modules are Irreducible*, Communications in Algebra **45** (2017), 1907-1913.
6. *Quasi-Gorensteinness of Extended Rees Algebras*, Journal of Commutative Algebra **9** (2017), 507–544.
7. With William Heinzer and Matt Toeniskoetter, *Blowing Up Finitely Supported Complete Ideals in a Regular Local Ring*, Journal of Algebra **498** (2016), 364–386.
8. With Aline Hosry and Javid Validashti *On the Equality of Ordinary and Symbolic Powers of Ideals*, Journal of Commutative Algebra **4** (2012), 281–292.

In Preparation/Submitted

9. With Thiago H. Freitas and Victor H. Jorge Pérez *On the study of the top non-vanishing formal local cohomology module*, in progress.
10. With Justin Chen and Jonathan Montaña, *Computing multiplicity sequences*, submitted, [arxiv.org/2103.14175](https://arxiv.org/abs/2103.14175).

Macaulay2 Package¹

- With Justin Chen and Jonathan Montaña, *MultiplicitySequence: A Macaulay2 Package for Computing Invariants Related to multiplicities*.
- *jMultiplicity: A Macaulay2 Package for Computing Invariants Related to j -multiplicities*, <https://sites.google.com/site/jmultiplicity>. This project is expanded and merged into the package “MultiplicitySequence.”

Talks (Academic)

- Special Sessions at Korean Mathematical Society, Apr 2021, Oct 2020.
- Special Sessions at AMS Sectional Meetings, Sep. 2020, Apr 2020 (canceled due to COVID-19), Nov 2018 (two talks), Oct 2018, Apr 2016 (two different meetings), Oct 2015, Mar 2015, Oct 2014, Apr 2014, Nov 2013, Oct 2013, Oct 2012.
- Contributed Papers Sessions at Joint Mathematics Meetings, Jan 2020.
- Algebra Seminar, Department of Mathematics, Tulane University, New Orleans, Louisiana, Nov 2019.
- Algebra Seminar, Department of Mathematics, Iowa State University, Ames, Iowa, Nov 2019.

¹Macaulay2 is a computer algebra software specialized in algebraic geometry and commutative algebra

- Algebra Seminar, Department of Mathematics, New Mexico State University, Las Cruces, New Mexico, Oct 2019.
- Algebra Seminar, Department of Mathematics Education, Chonnam National University, Gwangju, Korea, Aug 2019.
- Colloquium, Department of Mathematics, University of Ulsan, Ulsan, Korea, Jun 2018, Jan 2018, Sep 2016.
- Algebraic Geometry Seminar, KIAS, Seoul, Korea, Aug 2019, Jun 2018, Dec 2017.
- Algebraic Geometry Seminar, KAIST, Daejeon, Korea, Mar 2018, Sep 2016, Jun 2010.
- Colloquium, Department of Mathematics, Chungnam National University, Daejeon, Korea, Jan 2018.
- Southwest Local Algebra Meeting, Mar 2017.
- Algebraic Geometry Session at Vietnam - Korea workshop on selected topics in Mathematics, Da Nang, Vietnam, Feb 2017.
- Commutative Algebra Seminar, Purdue University, Sep 2016, Oct 2015, Mar 2015, Nov 2013, Apr 2011.
- Colloquium, California State University, San Bernardino, San Bernardino, Feb 2015.
- Commutative Algebra Seminar, University of Utah, Sep 2014.
- Kumunu Jr. 2014, University of Nebraska-Lincoln, Apr 2014.
- Commutative Ring Theory Seminar, University of Illinois at Urbana-Champaign, Urbana-Champaign, Nov 2013, Nov 2012.
- Commutative Algebra Seminar, University of California Riverside, Riverside, Apr 2013.
- Mathematics Research Community (MRC) on Commutative Algebra in Snowbird, Utah, Jun 2010.

Poster Presentations

- Commutative Algebra and its Interactions with Algebraic Geometry: Tight Closure, Linkage, and Syzygies, University of Michigan, Ann Arbor, Jul 2016.
- Midwest Commutative Algebra and Algebraic Geometry Conference, University of Notre Dame, South Bend, May 2016.
- Southwest Local Algebra Meeting, Feb 2016, Feb 2015, Mar 2011.
- Midwest Commutative Algebra Conference, Purdue University, West Lafayette, May 2015.
- Midwest Commutative Algebra and Geometry Conference, Purdue University, West Lafayette, May 2011.

Teaching Experiences²

California State University San Bernardino

All classes are around 25-30 students.

MATH 2210 Calculus I	F2020
MATH 2210 Calculus I Lab	F2020
MATH 4600 Theory of Rings and Fields	F2020

University of Arkansas, Fayetteville

All classes are between 55 to 70 students.

MATH2564 Calculus II (two sections)	F2019
MATH2584C Elementary Differential Equations (two sections)	S2018, S2019, F2018
MATH2043 Survey of Calculus (two sections)	F2017

University of California, Riverside

All classes were large lectures, between 80 to 230 students, with a number of teaching assistants.

²S = Spring, Su = Summer, F = Fall, W = Winter

MATH 9C First Year Calculus III (two sections)	S2017
MATH 6B Introduction to College Math for Science (Pre-calculus)	W2017
MATH 9C First Year Calculus III	F2016
MATH 120 Optimization Techniques	F2016
MATH 9C First Year Calculus III	S2016
MATH 120 Optimization Techniques	S2016
MATH 022 Calculus for Business	W2016
MATH 031 Applied Linear Algebra	W2016
MATH 9C First Year Calculus III (two sections)	F2015
MATH 9B First Year Calculus II	S2015
MATH 131 Linear Algebra (proof based course)	S2015
MATH 9A First Year Calculus (two sections)	W2015
MATH 8B Introduction to College Mathematics for Science	F2014
MATH 10A Calculus of Several Variables I	F2014

Purdue University

MA266, Ordinary Differential Equations	Instructor	Su2013
MA22400, Introductory Analysis II (Business Calculus)	Instructor	F2011, S2012
MA15300, Algebra and Trigonometry I (College Algebra)	Instructor	F2007, F2008, S2010
MA162, Plane Analytic Geometry and Calculus II	Instructor	Su2008
MA59800, Algebra Qualifying Exam Problem Session	Instructor	Su2011, Su2012
MA59800, Abstract Algebra (Graduate Algebra Course)	Recitation instructor	F2012, F2013
MA16200, Plane Analytic Geometry And Calculus II	Recitation instructor	S2009
MA166, Analytic Geometry And Calculus II	Recitation instructor	S2008
MA161, Plane Analytic Geometry And Calculus I	Recitation instructor	S2007
MA261, Multivariate Calculus	Recitation instructor	F2006

Teaching Conferences and Workshops

- Introduction to Teaching Online using Quality Learning and Teaching, certificate, Summer 2020.
- AMS Assessment in Mathematics, June 2020, online, Zoom.
- Mastery Grading Conference, June 2020, online, Zoom.

Research Conferences and Workshops

- The Joint Mathematics Meetings, 2020, 2019, 2017, 2013, 2011.
- Thematic Program in Commutative Algebra and its Interaction with Algebraic Geometry, Notre Dame, May-Jun, 2019
- Morgantown Algebra Days 2019, West Virginia University, Apr 2019.
- Southwest Local Algebra Meeting, Feb, 2019, Feb 2018, Mar 2017, Feb 2016, Feb 2015, Mar 2011.
- AMS Sectional Meetings, Nov 2018, Oct 2018, Apr 2016 (2), Oct 2015 (2), Mar 2015, Apr 2014, Nov 2013, Oct 2013, Oct 2012, Apr 2012, Nov 2010, Mar 2010, Oct 2007.
- Symposium in Algebraic Geometry, Busan, Korea, Dec 2017.
- Kumunu 2017, University of Kansas, Oct 2017.
- A View Toward Algebraic Geometry; a conference in honor of David Eisenbud's 70th birthday, May 2017.
- RTG Workshop on the Homological Conjectures in Commutative Algebra, University of Illinois at Chicago, Nov 2016.

- Commutative Algebra and its Interactions with Algebraic Geometry: Tight Closure, Linkage, and Syzygies, University of Michigan, Jul 2016.
- Local & global method in algebraic geometry, a conference honoring Lawrence Ein's 60th birthday, University of Illinois at Chicago, May 2016.
- Midwest Commutative Algebra and Algebraic Geometry Conference, University of Notre Dame, May 2016.
- Midwest Commutative Algebra Conference, Purdue University, May 2015.
- Positive Characteristic Algebraic Geometry Workshop, University of Illinois at Chicago, Mar 2014.
- Introductory Workshop: Noncommutative Algebraic Geometry and Representation Theory, MSRI, Jan 2013.
- Recent Advances in Algebraic Geometry, a conference in honor of Rob Lazarsfeld's 60th birthday, Ann Arbor, Michigan, May 2013.
- The Commutative Algebra of Singularities in Birational Geometry: Multiplier Ideals, Jets, Valuations, and Positive Characteristic Methods, MSRI, May 2013.
- Representation Theory, Homological Algebra, and Free Resolutions, MSRI, Feb 2013.
- Joint Introductory Workshop on Cluster Algebras and Commutative Algebra, MSRI, Aug 2012.
- 2nd and 3rd Bluegrass Algebra Conference, University of Kentucky, Mar 2009, Jun 2012.
- Computational workshop on F-singularities, University of Michigan, May 2012.
- Interactions between Commutative Algebra and Representation Theory, Apr 2012.
- Algebra, Geometry and Combinatorics Day, University of Illinois at Urbana-Champaign, Purdue University, Indiana University Purdue University Indianapolis, Nov 2009, May, Oct 2010, Mar, Oct 2011, Apr 2012.
- Commutative Algebra and Algebraic Geometry Conference, University of Illinois at Urbana-Champaign, Nov 2011.
- Midwest Commutative Algebra and Geometry Conference, Purdue University, May 2011.
- School and Workshop on Local Rings and Local Study of Algebraic Varieties, Trieste, Italy, Jun 2010.
- Mathematics Research Community on Commutative Algebra, Snowbird, Utah, Jun 2010.
- PASI in Commutative Algebra and Its Connections to Geometry, Honoring Wolmer Vasconcelos, Olinda, Brazil, Mar 2009.
- Conference to Celebrate Robin Hartshorne's 70th Birthday, University of Illinois at Chicago, Apr 2008.
- Commutative Algebra and Its Interactions: A Conference in Honor of Mel Hochster, University of Michigan, Jul 2008.

References

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