Curriculum Vitae

Hailong Dao

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Professional Preparation:

University of Sydney, NSW, Australia	Mathematics	B.S. 1998–2000.
University of Michigan, Ann Arbor, MI	Mathematics	Ph.D 2001–2006 (Advisor: Melvin Hochster)

Appointments:

University of Kansas, Lawrence, KS	Full Professor, 2019–present.
University of Kansas, Lawrence, KS	Associate Professor, 2014–2019.
University of Kansas, Lawrence, KS	Assistant Professor (tenure-track), 2008–2014.
University of Utah, Salt Lake City, UT	Wylie Assistant Professor, 2006–2008.

Grants and awards:

- Principal Investigator, Simons Foundation Collaboration Grant, "Problems in commutative algebra and related areas", MP-TSM-00002378, 42,000, September 2023-September 2028.
- Principal Investigator, Simons Foundation Collaboration Grant, FND0077558, "Problems in commutative algebra, with applications", 40,000, September 2018-September 2023.
- Principal Investigator, NSA grant FED0073853, "Problems in commutative algebra, with applications", 40,000, July 2016-July 2018.
- Principal Investigator, NSF grant 1104017, "Homological properties of commutative rings and applications", 131,608 USD, July 2011–July 2015.
- Principal Investigator, NSF grant 0834050, "Studies on homological and intersection theory questions over local rings", 145,000 USD, July 2008–July 2011.
- Co-PI (with D. Katz, D. Hernandez, E. Witt) , KUMUNU 2016 conference, NSF grant 1645050, 12,000.
- Co-Pi (with D. Katz, J. Montano), KUMUNU 2017 conference, NSF grant 1745772, 13,000.
- Co-Pi (with D. Katz), NSF grant DMS 1836048, 'KUMUNU 2018" (11,000 USD).

Master theses Advised:

- Scott Pruyn, University of Kansas, 2010-2011.
- Zachary Flores, University of Kansas, 2013–2014.
- Geoffrey Critzer, University of Kansas, 2021–2023.

Doctoral theses Advised:

- William Sanders, PhD student, University of Kansas, 2011–2015, completed. Director of Research, Iota Foundation.
- Ilya Smirnov, PhD student, University of Virginia (joint with Craig Huneke), 2012–2015, completed. Tenure-track professor, Basque Center for Applied Mathematics.
- Tony Se, PhD student, University of Kansas, 2011–2016, completed. Tenure-track Assistant Professor, Florida A&M University.
- Brent Holmes, PhD student, University of Kansas, 2013-2018, completed. Senior Data Scientist, Rocket Travel.
- Justin Lyle, PhD student, University of Kansas, 2015–2020, completed. Postdoc, SLMath.
- Dylan Beck, PhD student, University of Kansas, 2017–2022, completed. Assistant Professor, Baker University.
- Souvik Dey, PhD student, University of Kansas, 2018–2023, completed. Postdoc, Charles University, Prague.
- John Portin, PhD student, University of Kansas, 2018–present.
- Monalisa Dutta, PhD student, University of Kansas, 2020–present.
- Ritika Nair, PhD student, University of Kansas, 2020–present.
- Guided many successful research projects, resulting in high quality publications, for graduate students from KU and around the US. They include: Bennet Goeckner (KU student, now tenure-track at University of San Diego), Joseph Doolittle (KU student, now postdoc at TU Graz), Prashanth Sridhar (KU student, now postdoc at Auburn), Sarasij Maitra (University of Virginia student, now postdoc at Utah), Vaibhav Pandey (Utah student, now postdoc at Purdue).

Postgraduate-Scholars Supervised:

- Olgur Celikbas, Postdoctoral Scholar, University of Kansas, 2010–2011. Now Associate Professor at West Virginia University.
- Jay Schweig, Postdoctoral Scholar, University of Kansas, 2011–2014 (co-supervised with Jeremy Martin and Margaret Bayer). Now Associate Professor at Oklahoma State University.
- Jonathan Montaño, Postdoctoral Scholar, University of Kansas, 2015–2018. Now Assistant Professor at Arizona State University.
- Kyle Maddox, Postdoctoral Scholar, University of Kansas, 2020–2023 (co-supervised with Daniel Katz). Now postdoc at University of Arkansas.

Selected Research visits:

- Member, *Special Semester in Commutative Algebra.* Mathematical Sciences Research Institute, Berkeley, Spring 2024.
- Member, *Interactions between Representation Theory, Algebraic Topology and Commutative Algebra.* IRTATCA, Barcelona, Spring 2015.

- Member, *Special semester in Geometric Representation Theory.* Mathematical Sciences Research Institute, Berkeley, Fall 2014.
- Member, *Special Year in Commutative Algebra.* Mathematical Sciences Research Institute, Berkeley, Spring 2013.
- One-to-four-week visits to research centers: MSRI (Berkeley), AIM (San Jose), BIRS (Banff), CIRM (Luminy), ICMAT (Madrid), KAIST (Daejeon), KAIS (Seoul), MFO (Oberwolfach), CMO (Oaxaca), CRM (Barcelona), RIMS (Kyoto), and universities around the world.

Selected Professional Activities:

- Co-organizer, KUMUNU 2016, KUMUNU 2017, KUMUNU 2018.
- Co-organizer, "Homological days" workshops, University of Kansas, 2011, 2012, 2014, 2015, "Limits in characteristic p" workshop, University of Nebraska, 2013 (which now inspired many similar events across the country).
- Reviewer for National Security Agency grant proposals.
- Panelist for NSF grants evaluation.
- Referee for Communications in Algebra, Journal of Algebra, Math. Research Letters, Michigan Math. Journals, Illinois Journals of Math., Journal of Pure and Applied Algebra, Math. Zeischrift, Journal of European Math. Soc., Proceedings of the LMS, Transactions of the AMS, Compositio Math., Advances in Math., Journal of Algebraic Combinatorics, Nagoya Journal of Math., Algebra and Number Theory, Crelle's Journal, Math. Annalen, and many others.

Selected Synergistic Activities:

- Coordinator (making and grading exams for grade 4-12), Math Awareness Month Competition at University of Kansas, 2010-2017.
- Joint Coach, University of Kansas Putnam team, Fall 2008–2013.
- Instructor, "Homological conjectures in commutative algebra", Atlantic Association for Research in Mathematical Sciences Summer School, Dalhousie University, 2014.
- Instructor, "Homological questions in commutative algebra", 3-lecture introductory course for graduate and advanced undergraduate students at Tulane University, April 2009.
- Problems Selection Committee, International Mathematical Olympiad, Vietnam, July 2007.

Selected Service:

- College of Liberal Arts and Sciences Sabbatical Committee, 2022–present.
- Department Graduate Committee, 2012-2017, 2019–present.
- Department Executive Committee, 2017-2018.
- Department Hiring Committee (for tenure-track positions): 2013-2014, 2022–present.
- Department Hiring Committee (for postdoctoral positions): 2009, 2014, 2015, 2019, 2022.

- Committees for: Promotion and Tenure, Colloquium, Math Awareness Month and others.

Publications:

Published and accepted works (all peer-reviewed)

1. H. Dao, S. Dey, M. Dutta, *Exact subcategories, subfunctors of Ext, and some applications*, Michigan Math. Journal , to appear.
2. H. Dao, K. Maddox, V. Pandey, *Counting geometric branches via the Frobenius map and F-nilpotent singularities*, Nagoya Math. J. 254, 379-419 (2024).

   .
3. H. Dao, R. Nair, *On the Lefschetz Property for quotients by monomial ideals containing squares of variables*, Commun. Algebra 52, No. 3, 1260-1270 (2024).
4. H. Dao, H. Lindo, *Stable trace ideals and applications*, Collect. Math. 75, No. 2, 395-407 (2024).
5. H. Dao, L. Ma, M. Varbaro, *Regularity, singularities and h-vector of graded algebras*, Trans. Am. Math. Soc. 377, No. 3, 2149-2167 (2024).
6. H.Dao, S. Maitra, P. Sridhar, *On reflexive and I-Ulrich modules over curve singularities*, Trans. Amer. Math. Soc. Ser. B 10 (2023), 355–380.
7. H. Dao, D. Eisenbud, *Burch index, summands of syzygies and linearity in resolutions*, Bulletin of the Iranian Mathematical Society, 49 (2023),
8. H. Dao, Appendix to *Duality and normalization, variations on a theme of Serre and Reid*, by Janos Kollár, London Math. Soc. Lecture Note Ser., 478 (2022), Cambridge University Press, Cambridge, 2022, 216–252.
9. H. Dao, D. Eisenbud, *Linearity of free resolutions of monomial ideals*, Research in the Mathematical Sciences 9 (2022), no. 2, Paper No. 35, 15 pp.
10. H. Dao, A. De Stefani, *On monomial Golod ideals*, Acta Math. Vietnam. 47 (2022), no. 1, 359–367.
11. H. Dao, T. Kobayashi, R. Takahashi, *Trace ideals of canonical modules, annihilators of Ext modules, and classes of rings close to being Gorenstein*, Journal of Pure and Applied Algebra 225 (2021), no. 9, Paper No. 106655, 18 pp.
12. H. Dao, A. De Stefani, L. Ma, *Cohomologically full rings*, International Math. Research Notices (2021), no. 17, 13508–13545.
13. H. Dao, *On colon operations and special types of ideals*, Palestinian Journal of Mathematics 10 (2021), no. 2, 383–388.
14. H. Dao, J. Montaño, *Symbolic analytic spread: upper bounds and applications*, Journal of the Institute of Mathematics of Jussieu 20 (2021), no. 6, 1969–1981.
15. H. Dao, M. Eghbali, J. Lyle, *Hom and Ext, revisited*, J. Algebra 571 (2021), 75–93.
16. H. Dao, T. Kobayashi, R. Takahashi, *Burch ideals and Burch rings*, Algebra Number Theory 14 (2020), no.8, 2121–2150.

17. H. Dao, J. Doolittle, J. Lyle, *Minimal Cohen-Macaulay simplicial complexes*, SIAM Journal on Discrete Mathematics 34 (2020), 1602-1608.

18. H. Dao, I. Smirnov, *On generalized Hilbert-Kunz function and multiplicity*, Israel Journal of Mathematics, 237(2020), 155–184

19. H. Dao, O. Iyama, R. Takahashi, M. Wemyss, *Gorenstein modifications and $\mathbb{Q}$-Goresntein rings*, Journal of Algebraic Geom. 29 (2020), 729–751.

20. H. Dao, J. Montaño, *On asymptotic vanishing behavior of local cohomology*, Math. Zeischrift, 295 (2020), 73–86.

21. H. Dao, I. Smirnov, *The multiplicity and the number of generators of an integrally closed ideal*, Journal of Singularities, 19 (2019), 61–75.

22. H. Dao, J. Doolittle, K. Duna, B. Goeckner, B. Holmes, J. Lyle, *Higher nerves of simplicial complex*, Algebraic Combinatorics 2 (2019), 803-813.

23. H. Dao, J. Montaño, *Length of local cohomology of powers of ideals*, Transactions of the AMS, 371 (2019), 3483-3503.

24. H. Dao, J. Schweig, *The type defect of a simplicial complex*, J. Combin. Theory Ser. A, 163 (2019), 195–210.

25. H. Dao, O. Iyama, S. Iyengar, R. Takahashi, M. Wemyss, Y. Yoshino, *Noncommutative resolutions using syzygies*, Bulletin of the LMS, (2018), 1–6 .

26. H. Dao, Q. Pham, *On the associated primes of local cohomology*, Nagoya Math. Journal, (2018), 1–9.

27. H. Dao, A. De Stefani, E. Grifo, C. Huneke, L. Núñez-Betancourt, *Symbolic powers of ideals*, Advances in Singularities and Foliations: Geometry, Topology and Applications, Springer Proceedings in Mathematics and Statistics, 2018.

28. H. Dao, W. Sanders, *Cohomological support and the geometric join*, Documenta Mathematica, 22 (2017) 1593–1614.

29. H. Dao, I. Shipman, *Representation schemes and rigid maximal Cohen-Macaulay modules*, Selecta Mathematica, (2017), 1–14.

30. H. Dao, K. Kurano, *Boundary and shape of Cohen-Macaulay cone*, Math. Annalen, 364 (2016), no.3, 713–736.

31. H. Dao, S. Takagi, *On the relationship between depth and cohomological dimension*, Compositio Mathematica,152 (2016), no.4, 876–888.

32. H. Dao, K. Watanabe, *Some computations of higher Hilbert-Kunz multiplicities*, Proceedings of the AMS, 144 (2016), 3199–3206.

33. H. Dao, R. Takahashi, *The dimension of a subcategory of modules*, Forum Math. Sigma 3 (2015), e19, 31 pages.

34. H. Dao, J. Schweig, *Further applications of clutter domination parameters to projective dimension*, Journal of Algebra, 432 (2015), 1–11.

35. H. Dao, E. Faber, C. Ingalls, *Noncommutative desingularizations and the global spectrum of a commutative ring*, Algebra and Representation Theory, 18 (2015), no. 3, 633–664.

36. H. Dao, R. Takahashi, *Upper bounds for dimensions of singularity categories*, Comptes rendus Mathematique, 353 (2015), no. 4, 297–301.

37. H. Dao, O. Iyama, R. Takahashi, C. Vial, *Non-commutative resolutions and Grothendieck groups*, Journal of Noncommutative Geometry, 9 (2015), no. 1, 21–34.

38. H. Dao, J. Schweig, *Bounding Projective Dimensions of square-free Monomial Ideals using domination parameters for clutters*, Proceedings of AMS, 143 (2015), no.2, 555–565.

39. H. Dao, R. Takahashi, *Classification of resolving subcategories and grade consistent functions*, International Math. Res. Notices, (2015), no. 1, 119–149.

40. H. Dao, K. Kurano, *Hochster's theta pairing and numerical equivalence*, Journal of K-theory, 14 (2014), no. 3, 495–525.

41. H. Dao, R. Takahashi, *The radius of a subcategory of modules*, Algebra and Number Theory, 8 (2014), no. 1, 141–172.

42. O. Celikbas, H. Dao, R. Takahashi, *Modules that detect finite homological dimensions*, Kyoto Journal of Mathematics, 54 (2014), no.2, 295–310.

43. O. Celikbas, H. Dao, *Necessary conditions for the depth formula over Cohen-Macaulay local rings*, J. Pure and Applied Algebra, 218 (2014), no.3 522–530.

44. H. Dao, *Some Homological Properties of Modules over a Complete Intersection, with Applications*, Commutative Algebra: Expository Papers Dedicated to David Eisenbud on the Occasion of His 65th Birthday, Springer, 2013.

45. H. Dao, C. Huneke, *Vanishing of Ext, cluster-tilting modules and finite global dimension of endomorphism rings*, American J. Math. 135 (2013), no. 2, 561–578.

46. H. Dao, *Decenct intersection and and Tor-rigidity for modules over local hypersurfaces*, Transactions of the AMS 365 (2013), no. 6, 2803–2821.

47. H. Dao, J. Schweig, *Projective Dimension, Graph Domination Parameters, and Independence Complex Homology*, J. Combinatorial Theory A 120 (2013), no. 2, 453–469.

48. H. Dao, C. Huneke, J. Schweig, *Bounds on the regularity and projective dimension of ideals associated to graphs*, Journal of Algebraic Combinatorics (August 2012), 1–19.

49. O. Celikbas, H. Dao, C. Huneke, Y. Zhang, *Bounds on the Hilbert-Kunz Multiplicity*, Nagoya Math. J., 205 (2012), 149–165.

50. H. Dao, *Picard groups of punctured spectra of dimension three local hypersurfaces are torsion-free*, Compositio Mathematica, 148 (2012), 145–152.

51. O. Celikbas, H. Dao, *Asymptotic Behavior of Ext functors for modules of finite complete intersection dimension*, Math. Zeischrift, 269 (2011), 1005–1020.

52. H. Dao, J. Li, C. Miller, *On (non)rigidity of the Frobenius over Gorenstein rings*, Algebra and Number Theory 4-8 (2010), 1039–1053.

53. H. Dao, *Remarks on non-commutative crepant resolutions*, Advances in Math., 224 (2010), 1021–1030.

54. H. Dao, O. Veliche, *Comparing complexities of pairs of modules*, Journal of Algebra, 322 (2009), 3047–3062.

55. H. Dao, *Some observations on local and projective hypersurfaces*, Math. Research Letters, 15 (2008), 207–219.

56. H. Dao, *On injectivity of maps between Grothendieck groups induced by completion*, Michigan Math. Journal , 57 (2008), 195–199.

57. H. Dao, *On liftable and weakly liftable modules*, Journal of Algebra, 318 (2007), 723–736.

Preprints

1. H. Dao, C. Doan, D. Eisenbud, T. Kobayashi, C. Polini, B. Ulrich, *Syzygies of the residue field over Golod rings*,https://arxiv.org/abs/2408.13425.

2. H.. Dao, T. Vu, *Regularity of linearly presented squarefree monomial ideals*, https://arxiv.org/abs/2406.10595.

3. M. Brown, H. Dao, P. Sridhar, *Periodicity of ideals of minors in free resolutions*, https://browse.arxiv.org/abs/2306.00903.

4. H. Dao, *Elias ideals*, https://browse.arxiv.org/abs/2301.00569.

5. H. Dao, *Reflexive modules, self-dual modules and Arf rings*, https://arxiv.org/abs/2105.12240.

6. H. Dao, S. Dey, M. Dutta, *Ulrich split rings*, https://browse.arxiv.org/abs/2210.03872.

7. H. Dao, T. Se, *Finite F-type and F-abundant modules*, https://arxiv.org/abs/1603.00334.

8. H. Dao, *Asymptotic behavior of Tor over complete intersections and applications*, https://www.math.ku.edu/~hdao/asymptotic.pdf.

Presentations:

Long presentations

1. *Local singularities: algebraic, categorical and combinatorial aspects.*
Special Invited Lecture, Annual Meeting of Japanese Mathematical Society, Osaka University, Osaka, Japan September 2024.

2. *Local Bertini results for surfaces.*
Commutative Algebra and Singularity Theory, Conference in honor of Kei-ichi Watanabe 80th birthday, Osaka Metropolitan University, Osaka, Japan, September 2024.

3. *The combinatorics of syzygies.*
IBS-DIMAG Workshop on Combinatorics and Geometric Measure Theory, Dajeon, Korea, July 2024.

4. *The dual of the canonical module and applications.*
VIASM, Hanoi, Vietnam, June 2024.

5. *Some new results in commutative algebra with the help of data analysis and machine learning.*
VIASM, Hanoi, Vietnam, June 2024.

6. *Some new directions in commutative algebra.*
DAHITO Conference, Dalat, Vietnam, June 2024.

7. *On structure of infinite resolutions.*
Meiji University Commutative Algebra Seminar, Tokyo, May 2024.

8. *Singularities via categories.*
Nihon University Commutative Algebra Seminar, Tokyo, May 2024.

9. *The dual of the canonical module and applications.*
Commutative Algebra and Algebraic Geometry Seminar, UC Berkeley, January 2024.

10. *Some research directions in commutative algebra.*
Commutative Algebra Seminar, VIASM, Hanoi, July 2023.

11. *Bounds on regularity of monomial ideals*
Commutative Algebra Seminar, Vietnam Institute of Advanced Studies in Mathematics, Hanoi, July 2023.

12. *Vector bundles on punctured spectrum of local rings*
Algebraic Geometry Seminar, Vietnam Institute of Mathematics, July 2023.

13. *Fractals, Hanoi Tower and Syzygies.*
Colloquium, Department of Mathematics, Hue University, Hue, Vietnam, June 2023.

14. *Fitting ideals of infinite resolutions.*
Conference on Commutative Algebra and its interaction with Algebraic Geometry and Combinatorics 2023, VIASM, Hanoi, June 2023.

15. *Fractals, Hanoi Tower and Syzygies.*
Colloquium, Department of Mathematics, University of Primorska, Slovenia, May 2023.

16. *Categorical Approaches to Local Singularities.*
Workshop on Commutative Algebra and Algebraic Geometry in Prime Characteristics, ICTP, Trieste, Italy, May 2023.

17. *Some results and questions in Stanley-Reisner theory motivated by commutative algebra*, Interactions Between Topological Combinatorics and Combinatorial Commutative Algebra, BIRS, Banff, Canada, April 2023.

18. *From Tower of Hanoi to Syzygies, a fractal story.*
Arizona State University, Colloquium, October 2022.

19. *Fractals and Syzygies.*
University of Alabama, Tuscaloosa, Colloquium, September 2022.

20. *Burch index, summands of syzygies and linearity in resolutions.*
University of Arkansas, Fayettville, Algebra Seminar, September 2022.

21. *From Tower of Hanoi to Syzygies, a fractal story.*
Oberlin College Lenora Lecture, February 2022.

22. *Reflexive modules, trace ideals and Arf singularities.*
Princeton Algebraic Geometry Seminar, March 2022.

23. *Linear syzygies of monomial ideals.*
CUNY Commutative Algebra and Algebraic Geometry Seminar, March 2022.

24. *Burch ideals, Burch rings and infinite resolutions.*
Berkeley Commutative Algebra and Algebraic Geometry Seminar, January 2022.

25. *On linear resolution and WLP of monomial ideals.*
Stockholm University Commutative Algebra Seminar (online), January 2022.

26. *Linearity of Free Resolutions of Monomial Ideals.*
Auburn University Algebra Seminar, December 2021.

27. *Reflexive modules over curve singularities.*
Virtual Commutative Algebra Seminars, IIT Bombay, July 2020.

28. *A truly mutually beneficial friendship: how Stanley-Reisner theory enhanced both combinatorics and algebra.*
Fellowship of the Ring, National Seminar (online), June 2020.

29. *Mysterious ideals: Golod ideals.*
Commutative Algebra Seminar, University of Nebraska, Lincoln, February 2019.

30. *Counting polynomials and the complexity of singularities.*
Colloquium, New Mexico State University, February 2019.

31. *Cohomologically full rings.*
New Trends in Syzygies, Banff, Canada, June 2018.

32. *Higher nerves of simplicial complexes.*
Algebra Seminar, Georgia Tech, April 2018.

33. *Canonical cover and non-commutative desingularizations.*
Geometric Methods in Representation Theory, Iowa City, November 2017.

34. *Auslander-Reiten duality for commutative rings: a survey of some recent developments.*
Commutative Algebra and Algebraic Geometry Seminar, UC Berkeley, September 2017.

35. *On h-vector of standard graded algebras.*
Commutative Algebra: Homological and Combinatorial Methods, PRIMA Congress 2017, Oaxaca, Mexico, August 2017.

36. *On rigid MCM modules.*
Matrix factorisations and related topics, International Center for Mathematical Sciences, Edinburgh, July 2017.

37. *Hilbert function of local cohomology and Presburger arithmetic.*
Nonlinear Algebra Seminar, Max Planck Insititute for Mathematics, Leipzig, Germany, July 2017.

38. *Some categorical aspects of matrix factorizations.*
Matrix Factorizations in Mathematics and Physics, Simons Center for Geometry and Physics, Stony Brooks, June 2017.

39. *An inequality about multiplicity of integrally closed ideals.*
Commutative Algebra Seminar, University of Michigan, March 2017.

40. *On h-vector of standard graded algebras.*
Algebra Seminar, University of Missouri, March 2017.

41. *On local-global phenomena in the Betti tables of Stanley-Reisner ideals.*
Combinatorics Seminar, University of Miami, February 2017.

42. *Asymptotic behavior of local cohomology of thickenings of ideals.*
Asymptotic Phenomena in Local Algebra and Singularity Theory, Oberwolfach, November 2016.

43. *Cohen-Macaulay representation theory and singularities.*
Geometry, Algebra, Singularities, Combinatorics Seminar, Northeastern University, November 2016.

44. *Bounds on cohomological dimension and regularity.*
Commutative Algebra and Its Interactions with Algebraic Geometry (in honor of Craig HunekeÕs Birthday), Ann Arbor, MI, July 2016.

45. *On rigid maximal Cohen-Macaulay modules.*
Non-commutative crepant resolutions, Ulrich modules and generalizations of the McKay correspondence, RIMS, Kyoto, Japan, June 2016.

46. *Cohomological support and the geometric join.*
Commutative Algebra Seminar, University of Nebraska, Lincoln, NE, March 2016.

47. *Endomorphism rings and non-commutative resolution of singularities.*
Algebraic Geometry, Arithmetic Geometry, and Commutative Algebra Seminar, University of South Carolina, Columbia, SC, March 2016.

48. *Recent results in Cohen-Macaulay representation theory, I.*
Preprojective Algebras Interacting with Singularities, Cohen-Macaulay Modules and Weighted projective Spaces, Oaxaca, Mexico, November 2015.

49. *On some recent consequences of Serre's conditions* (S_i).
Syzygies in Algebra and Geometry, Haeundae, Busan, Korea, August 2015.

50. *On some recent consequences of Serre's conditions* (S_i).
Midwest Commutative Algebra Conference, Purdue University, August 2015.

51. *Higher Hilbert-Kunz Theory*
Algebra and Combinatorics Seminar, ICMAT, Madrid, March 2015.

52. *Cohen-Macaulay representation and categorical classification of singularities*
Algebra and Combinatorics Seminar, ICMAT, Madrid, March 2015.

53. *Most Cohen-Macaulay domains are of finite rank type, up to homological equivalence*
Homological bonds between Commutative Algebra and Representation Theory workshop, CRM, Barcelona, February 2015.

54. *Endomorphism rings and non-commutative resolution of singularities*
Commutative Algebra and Algebraic Geometry Seminar, UC Berkeley, Berkeley, December 2014.

55. *Asymptotic behavior in commutative algebra* (two one-hour talks)
The 36th Symposium on Commutative Algebra, International Productivity Center, Hayama, Japan, Nov 2014.

56. *Cohen-Macaulay cones and asymptotic behavior of graded system of ideals*
KUMUNU, Columbia, Missouri, September 2014.

57. *On some new connections between commutative algebra and combinatorial commutative algebra*
Meeting On Combinatorial Commutative Algebra, Levico, Italy, September 2014.

58. *On limits in commutative algebra*
Commutative Algebra and Algebraic Geometry Seminar, UC Berkeley, Berkeley, September 2014.

59. *On the structure of Hom(M,N)*
Algebra seminar, Nihon University, Tokyo, July 2013 .

60. *Cohen-Macaulay cones and graded system of ideals (two 90-minute talks)*
Nagoya University Algebra Seminar, Nagoya, July 2013.

61. *On the structure of Hom(M,N)*
RIMS workshop on Noncommutative Algebraic Geometry, Kyoto, July 2013.

62. *Generalized Hilbert-Kunz function and multiplicity*
Focus period on characteristic p methods, Mathematical Sciences Research Institute, Berkeley, April 2013.

63. *Cohen-Macaulay cones and subcategories*
Representation Theory, Homological Algebra, and Free Resolutions, Mathematical Sciences Research Institute, Berkeley, February 2013.

64. *Classifying resolving subcategories of mod R*
Commutative Algebra and Its Interactions with Algebraic Geometry, Representation Theory, and Physics, Pan-American Advanced Studies Institute, Guanajuato, Mexico, May 2012.

65. *Non-commutative crepant resolutions*
(unscheduled talk) Syzygies in Algebraic Geometry, with an exploration of a connection with String Theory, Banff International Research Station, Banff, Canada, May 2012.

66. *Solving equations in the semiring of vector bundles*
Commutative Algebra Seminar, University of Illinois, Urbana-Champagne, March 2011.

67. *Solving equations in the semiring of vector bundles*
Algebra Seminar, University of California, Los Angeles, January 2011.

68. *The homological conjectures revisited*
The 32nd Commutative Algebra Symposium, Tokyo, Japan, December 2010.

69. *On the structure of Hom(M,N)*
National Commutative Algebra meeting in the South-East, Georgia State University, Atlanta, September 2010.

70. *Non-commutative crepant resolutions, cluster tilting and Ext vanishing over Cohen-Macaulay rings I*
Commutative Algebra Seminar, University of Nebraska, Lincoln, March 2010.

71. *Non-commutative crepant resolutions, cluster tilting and Ext vanishing over Cohen-Macaulay rings II*
Commutative Algebra Seminar, University of Nebraska, Lincoln, March 2010.

72. *Playing with Ext and Tor*
Colloquium, University of Utah, Salt Lake City, February 2010.

73. *Non-commutative desingularizations and cluster-tilting objects over Cohen-Macaulay rings*
Commutative Algebra Seminar, University of Utah, Salt Lake City, February 2010.

74. *Singh-Swanson's method for computing integral closure*
Workshop on computing integral closure, MSRI, Berkeley, August 2009.

75. *Homological properties of local complete intersections*
Commutative Algebra Session, PRIMA 1st Congress, University of New South Wales, Sydney, July 2009.

76. *A short course on homological questions in commutative algebra*
Tulane University, New Orleans, April 2009.

77. *Topological and homological properties of local complete intersections*
Homotopy Theory and Applications Conference, University of Nebraska, Lincoln, April 2009.

78. *Topological and homological properties of local complete intersections*
Commutative Algebra Seminar, University of Missouri, Columbia, March 2009.

79. *Injectivity of maps between class groups induced by ring extensions*
Commutative Algebra Seminar, University of Michigan, Ann Arbor, March 2009.

80. *Complexities of modules*
GSU-SCU Joint Algebra Seminar, Atlanta, February 2009.

81. *Geometric and homological properties of algebraic sets*
Algebra Seminar, Texas Tech University, Lubbock, February 2009

82. *Vanishing of Tor and torsion-freeness of the divisor class group*
Commutative Algebra and its interactions (Mel Hochster Conference), University of Michigan, Ann Arbor, July 2008.

83. *Intersections of algebraic sets*
Colloquium, Colorado State University, Fort Collins, February 2008.

84. *On nice geometric and homological properties of algebraic sets*
Colloquium, Tulane University, New Orleans, February 2008.

85. *Extensions of theorems by Auslander via Grothendieck groups*
Commutative Algebra Seminar, University of Kansas, Lawrence, October 2007.

86. *Homological questions over local complete intersections*
Conference on Commutative Algebra and its Interaction with Algebraic Geometry, BIRS, Banff, Canada, June 2007.

87. *Homological questions over local complete intersections*
Advances in Algebra and Geometry Workshop, MSRI, Berkeley, April 2007.

88. *On some questions over local and projective hypersurfaces*
Algebraic Geometry Seminar, University of Utah, Salt Lake City, January 2007.

89. *Vanishing of Chow groups and intersection properties of modules over hypersurfaces*
Commutative Algebra Seminar, University of Utah, Salt Lake City, February 2006.

90. *Complexities of Ext and Tor over complete intersections.*
Commutative Algebra Seminar, University of Nebraska, Lincoln, October 2005.

91. *Asymptotic multiplicity and rigidity over complete intersections.*
Commutative Algebra Seminar, University of Nebraska, Lincoln, October 2005.

Short presentations

1. *Linear syzygies over singular rings.*
AMS Spring Central Sectional Meeting, online, March 2022.

2. *On monomial ideals with $N_{d,p}$ property.*
AMS Fall Sectional Meeting, Creighton University, NE (online), October 2021.

3. *Burch ideals and Burch rings.*
AMS Fall Sectional Meeting, El Paso, TX (online), September 2020.

4. *Minimal Cohen-Macaulay complexes.*
AMS Fall Sectional Meeting, El Paso, TX (online), September 2020.

5. *Regularity bounds on linearly presented monomial ideals.* Special Session on Interactions Between Combinatorics and Commutative Algebra, AMS Fall Sectional Meeting, Fayetteville, AR, November 2018.

6. *On h-vector of standard graded algebras.*
Special Session on Lefschetz properties, AMS Sectional Meeting, Columbus, Ohio, March 2018.

7. *Local cohomology of powers of ideals.*
Special Session on Commutative Algebra, AMS Fall Sectional Meeting, Denton, TX, September 2017.

8. *When is the product of ideals Golod?.*
Special Session on Homological Methods in Commutative Algebra, AMS Fall Sectional Meeting, Denton, TX, September 2017.

9. *Cohomological support and the geometric join.*
AMS Special Session on Commutative Algebra, Spring Southeastern Sectional Meeting, Athens, GA, March 2016.

10. *On the relationship between depth and cohomological dimension.*
AMS Special Session on Commutative Algebra, Joint Mathematics Meetings, Seattle, March 2016.

11. *Bounding projective dimension via domination parameters*
Special Session on Syzygies, Joint Mathematics Meetings, San Antonio, Texas, January 2015.

12. *Higher Hilbert-Kunz theory*
AMS Special Session on Topics in Commutative Algebra, Spring Western Sectional Meeting, Albuquerque, April 2014.

13. *Cohen-Macaulay cones*
AMS Special Session on Developments from PASI 2012: Commutative Algebra and Interactions with Related Disciplines, Spring Western Sectional Meeting, Lubbock, April 2014.

14. *Higher Hilbert-Kunz theory*
AMS Special Session on Topics in Commutative Algebra, Spring Western Sectional Meeting, Albuquerque, April 2014.

15. *Hochster's theta pairing and numerical equivalence*
AMS Special Session on Commutative Algebra and Algebraic Geometry, JMM, San Diego, January 2013.

16. *On the existence of non-trivial semi-dualizing modules*
AMS Special Session on Topics in Commutative Algebra, Fall Western Sectional Meeting, University of Arizona, Tucson, Arizona, October 2012.

17. *Some problems in combinatorial commutative algebra motivated by commutative algebra*
AMS Special Session on Combinatorial Commutative Algebra, Fall Southeastern Section Meeting, Tulane University, New Orleans, Louisiana, October 2012.

18. *On the semiring of vector bundles over punctured spectrum of a regular local ring*
AMS Special Session on Commutative Algebra, New Orleans, Louisiana, January 2011.

19. *Complexities of (co)homology of pairs of modules*
AMS Special Session on Commutative Algebra, Boca Raton, Florida, October 2009.

20. *On structure of Hom(M,N)*
AMS Special Session on Commutative Algebra, Waco, Texas, September 2009.

21. *On liftable and weakly liftable modules*
AMS Special Session on Free Resolutions, Chicago, October 2007.

22. *Existence of big Cohen-Macaulay modules and applications* (with Jean Chan).
Minnowbrook Workshop on Commutative Algebra, New York, August 2005.

23. Various presentations in the University of Kansas Mathematics department algebra, combinatorics and graduate students seminars (at least one per semester).