

## Curriculum Vita of Hema Srinivasan

### Address

Department of Mathematics  
University of Missouri, Columbia, Missouri 65211

### Education

Ph.D. Brandeis University, May 1986.  
M.A. Indiana University, Bloomington, May 1982.

### Research Areas

Commutative Algebra, Algebraic Geometry and Multi-linear Algebra.

### Thesis Advisor

Professor David A. Buchsbaum

### Positions held since Ph.D

Professor, University of Missouri, from August 1997  
General Member, MSRI, 2012-2013  
General Member of Mathematical Sciences Research Institute, Berkeley, Fall 2002  
Visiting Professor, Northeastern University, Jan-June 2000  
Associate Professor, University of Missouri, from August 1993  
Visiting Fellow, SPIC Science Foundation, Madras, Spring 1991.  
Assistant Professor, University of Missouri, from August, 1989.  
Research Assistant Professor, Purdue University, August 1988-June 1989.  
Visiting Instructor, Michigan State University, August 1986-June 1988.

### Awards

Ghia Prize for Mathematics, Bombay University, Sept. 1978.  
National Science Talent Scholar, (India) Aug. 1975-July 1980  
IBM Fellowship, Aug. 1984-July 1986 (Held at Brandeis University)  
General Member, MSRI, Special year in Commutative Algebra, Dec 2012-May 2013  
General Member, MSRI, Special Year in Commutative Algebra, Fall 2002  
Fellow, American Mathematical Society, since 2018.

### Grants

NSF Research grant, July 1989-June 1990  
Summer Research Fellowship, UMC, Summer 1992,  
NSF Research grant DMS 8922794, July 1990-June 1993  
NSF Research grant DMS 9302735 July 1993- June 1996  
UM-Research Board grant, May 1993- ( To organize a conference)  
NSF Research grant DMS 9623141 1July 1996- June 1999  
UM Research Board grant June 1996- May 97  
International Travel Grant Summer 1998  
UM Research Council grant, 1999-2000

Provost's Research Leave 1999-2000  
 UM Research Board grant April 2001 ( to organize a conference)  
 NSA Research grant, Mathematical Sciences, Feb 2000- August 2001  
 UM Research Board grant June 2001-May 2002  
 UM Research Council Grant, 2002-2003  
 Provost's Research leave Fall 2002  
 NSA Research grant, November 2001- October 2003  
 NSF grant, IIA ( International and Integrative Activities) 0332270 December 2003-  
 June 2004  
 UM Research Board Grant June 2005- May 2006  
 NSF grant, DMS 1243928, Conference Grant for KUMUNU 2012, with S.D.Cutkosky,  
 October 2012 - September 2013  
 NSF grant, DMS 1341860 Conference Grant for KUMUNU 2013, with S.D. Cutkosky,  
 October 2013- Sept 2014  
 NSF grant, DMS 1443929 Conference Grant for KUMUNU 2014, with S.D. Cutkosky,  
 October 2014- Sept 2015  
 NSF grant, DMS 1544454 KUMUNU 2015, with S.D. Cutkosky, October 2015-  
 Sept 2016

#### Conferences Organized

- (1) Midwest-Great Plains Workshop in Commutative Algebra, June 1991, Columbia, MO, Co-organized with D.Cutkosky, J.Huckaba, I.Papick and D.Weston.
- (2) Algebraic Geometry - Interactions between Algebraic Geometry and Commutative Algebra, Columbia, MO, May 28-30, 1993, Co-Organized with S.D. Cutkosky.
- (3) Special Session in Commutative Algebra, AMS Meeting, in Nov 1996 in Columbia, MO, Co-organizer: S.D. Cutkosky.
- (4) Special Session in Commutative Algebra, AMS Meeting, Sept 26-28, 1997, Montreal, Canada, Co-organizer: Irena Peeva.
- (5) Special Session in Commutative Algebra, AMS National Meeting, Jan 2000, Washington DC, USA. Co-organizer: Irena Peeva.
- (6) Algebra Weekend 2001, April 2001, Columbia, MO, Co-organizer Dale Cutkosky.
- (7) AMS special session in Commutative Algebra and Algebraic Geometry, Montreal, Canada, May 3-5, 2002. Co-organizer: Irena Peeva
- (8) First Joint meeting of the American and Indian Math. Societies, Special Session on Commutative Algebra and Algebraic Geometry, Dec 17-20, 2003 India ,Co-organizers, S. Ghorpade, J. Verma of IIT Bombay.
- (9) First Joint meeting of the AMS and Indian Math Society, Poster session, Dec 17-19, 2003 Bangalore, India. (Co-organizer Rajaram Bhatt, IISC, Bangalore)
- (10) International Conference in Commutative algebra and algebraic geometry featuring young presenters, Dec. 16,2003, Bangalore, India, Co-organizers, S. Ghorpade, D.Patil and J. Verma .
- (11) KUMUNU 2012, September 2012 - Algebra Conference at MU (Co-organizer)
- (12) KUMUNU 2013 September 2013 Algebra Conference at MU (Co-organizer)
- (13) AMS Special Session in Commutative Algebra, at Washington University, Saint Louis, Oct 2013, Coorganizer: Lianna Sega
- (14) KUMUNU 2014 ( Sept. 22-23 2014) (Co-organizer)
- (15) KUMUNU 2015 (Oct. 24-25, 2015) (Co-organizer)

## Masters and Doctoral students

- (1) David Barker (MA 2002)  
Master's Project Title: Bilinear Forms
- (2) Gabriel Coon: Undergraduate student project under Hugh's program, completed 1998.  
Project title: Three Conjectures on Permanents.
- (3) Sabine ElKhoury: (MA 2005)  
Masters Project title: Divided Power Algebras
- (4) Natalia Svyeshnikova: (MA 2006)  
Masters project: "Magic Squares"
- (5) Dennis Williams: Doctoral Student (MA 2006)  
Project title: Gröbner bases
- (6) Jane Peters; (MA 2008)  
Thesis title: Non Euclidean Principal Ideal Domains
- (7) Sabine El Khoury , **Ph.D 2007**  
Thesis: Structure of a Class of Grade Four Gorenstein Artin Algebras.
- (8) Heidi Hulsizer, **Ph.D 2010**  
Thesis: Minimal Resolutions of Gorenstein Determinantal Ideals.
- (9) Sumi Seo, **Ph.D 2010**  
Thesis: Almost Complete Intersections, Hilbert Functions and Determinantal Ideals.
- (10) Adriano Marzullo, **Ph.d 2010**  
Thesis: Periodicity of Betti numbers of certain Semigroup Rings Under Translations.
- (11) Samuel Hardwick, **Ph.D 2014**  
Thesis: Collatz Conjecture - On Solution in the bounded case
- (12) Valeria D'Orazio, **Ph.D 2014**  
Thesis: On unimodality of Hilbert functions of Artinian Level Algebras of Codimension 3 and Type 2 and 3
- (13) Rui Zhao, Masters Student (MA 2016)  
Project: Structure of Free Resolutions

Selected Masters and Ph.D committees of students in Commutative algebra, algebraic geometry and related subjects at MU and outsider MU.

- (1) Vinh, Pham An( Algebraic Geometry, MU Ph.D 2014)
- (2) Soumya Sanyal (Algebraic Geometry, MU Ph.D 2014)
- (3) Krishna Hanumanthu, (Algebraic Geometry, MU, Ph.D 2008)
- (4) Samar El Hitti (Algebraic Geometry, MU, Ph.D 2008)
- (5) Russell Goward, (Algebraic Geometry, MU, Ph. D 2002)
- (6) Susan Cooper, ( Commutative Algebra, Queens U., Canada, Ph.D 2005)
- (7) Olga Kascheyeva, (Algebraic Geometry, MU, Ph.D 2003)
- (8) Pramod Bommaraju ( Masters Committee, MAE, MU, MS 2006)
- (9) Ragini Suram, (Electrical Engineering, MU, MS 2003)
- (10) Tamara Kucherenko ( Modern Analysis, MU, fi 2003)
- (11) Thomas Pyle, (Algebraic Geometry, MU, MA 1999)
- (12) Abdul RAzak (Applied Math, Jamal Mohammed College, Trichi, India, 2007)
- (13) R.S. Raja Durai, (Coding Thoery, IIT Madras, India 2003)
- (14) M. Ramathilingam, (Coding Theory, Algebra, IIT-Madras, India, 2002)
- (15) R. Balasubramanian, (Applied Mathematics, IIT- Madras, India, 2001)

## Mentorships

- (1) Srikanth Iyengar, (MU Post doc 1998-1999) (Currently, Professor of Mathematics at University of Nebraska, Lincoln.)
- (2) Laura Ghezzi, (MU Post doc 2001-2004) (Currently, Assistant Professor at NYC College of Technology, CUNY.)
- (3) Chris Francisco, (MU Post doc 2005-2008), (Currently, Assistant Professor of Mathematics at Oklahoma State University)
- (4) Kia Dalili ( MU Post doc 2007-2011) ( Currently with Google)
- (5) Indranath Sengupta ( Visiting position at MU 2007)(currently at IIT Gandhinagar, India)
- (6) A.V. Jayanthan (Sponsored for BOYSCAST National Board of Higher Math Fellowship from India, 2011) Associate Professor at IIT Madras.

## Professional memberships and Service

Member: American Math Society ( AMS) and Association for Women in Mathematics (AWM)

AMS: Member of Committee on Meetings and Conferences, 2001-2004; Member of Summer Research Conferences Committee 2000-2004 Elected to Nominating Committee 2006 Member Nominating Committee: 2007-2009

MU: At the University of Missouri, my services include Campus P&T committees, Minority Affairs Committee, Status of Women Committee, Admissions Review Committee, and Faculty Development and Advisory Committee.

## Publication List of Hema Srinivasan

- (1) *Algebra Structures on some Canonical Resolutions*, J. Algebra, vol 122, no 1, 1989., pp. 150–187.
- (2) *Ranks of syzygies of Perfect Modules*, J. Pure and Applied Algebra, Vol. 65, No. 1, 1990; pp. 91–96.
- (3) *Minimal Algebra Resolutions of Cyclic Modules defined by Huneke-Ulrich Ideals*, J. Algebra, Vol. 137, No. 2, 1991; pp. 433-472.
- (4) *On the finite generation of the Symbolic Algebras of Monomial primes*, Communications in Algebra, Vol. 19, 1991; pp. 2557-2564.
- (5) *The non-existence of a minimal algebra resolution despite the vanishing of Avramov Obstructions*, J. Algebra, Vol. 146. No. 2. 1992; pp. 251-266.
- (6) *Local fundamental groups of surface singularities in characteristic  $p$* , (with S.D. Cutkosky), Comm. Math. Helvetici 68 (1993), 319-332.
- (7) *An intrinsic Criterion for Isomorphism of Singularities*, (with S.D. Cutkosky), American Journal of Mathematics, vol 115 (1993), 789-821.
- (8) *Decomposition Formulas for Pfaffians*, J. Algebra 163 (1994), 312-334.
- (9) *Algebra Structures for the graded free resolutions*, Contemporary Math., Vol 159 (1994), 357-365.
- (10) *Finite determinacy of mappings*, in Commutative Algebra, W. Bruns, J. Herzog, M. Hochster, U. Vetter, eds, Verlag Druckerei Runge GmbH, Cloppenburg, (1994), 180-183.
- (11) *A grade five cyclic Gorenstein module with no minimal algebra resolutions*, J. Algebra 179 (1996), 362-379.
- (12) *Equivalence and finite determinacy of mappings*, (with S.D. Cutkosky), J. Algebra 188, 16-57 (1997)
- (13) *Bounds for multiplicity*, (with J. Herzog), Transactions of the AMS, Vol 350, NO. 7 (1998), 2879-2902
- (14) *A note on Multiplicities of Gorenstein Algebras*, J. Algebra. (208) 425-443 (1998)
- (15) *The algebraic fundamental group of the complement of a curve singularity* (with S.D. Cutkosky), J.Algebra, (1) 2000,201-226 Volume in honor of David Buchsbaum
- (16) *Isomorphism of Complexes and Lifts* (with S.D.Cutkosky), in Geometric and Combinatorial aspects of Commutative Algebra (Messina 1999), Lecture Notes in Pure and Applied Mathematics 220, Dekker NY, 2001.
- (17) *Towards a criterion for isomorphism of Complexes*, (with S.D. Cutkosky) in Ideal theoretic methods in commutative algebra (Columbia MO 1999), Lecture Notes in pure and applied Mathematics 217, Dekker NY 2001.
- (18) *Artinian Gorenstein Algebras of embedding dimension four: Components of  $PGORH$  for  $H = (1, 4, 7, \dots)$* , (With A.Iarrobino) , Journal of Pure and Applied Algebra, 201(2005), n0 1-3, 62-96
- (19) *Gorenstein Sequences*, Advances in Algebra and Geometry, ed. Hindustan Publishing Agency, 2003.
- (20) *Some Gorenstein Artin Algebras of embedding dimension four II* ,with A. Iarrabino, in preparation
- (21) *Multiplicities of Monomial Ideals*,(with Juergen Herzog), J. Algebra, 274 ( 2004), No 1, 230-244.
- (22) *Asymptotic behavior of the length of local cohomology* with S.D.Cutkosky, Tai Ha, E.Theoderescu , Canadian Journal of Math, 57 ( 2005). 1178-1192.

- (23) *Linkage, Betti Numbers and Degree Bounds for Zero Schemes* ( With L.Gold and H. Schenk), J.P.A.A., 210 (2007), no. 2, 481–491.
- (24) *Factorization of Birational Extensions of Rings* With S. D. Cutkosky, Illinois J. Math. 51 (2007), no. 1, 41–56 .
- (25) *Multiplicity Conjectures* (With C. Francisco), Syzygies and Hilbert functions, Lect. Notes Pure Appl. Math., 254, Chapman & Hall/CRC, Boca Raton, FL, 2007, 145-178
- (26) *Duality and Tameness*, (With M.Chardin, S. Cutkosky and J. Herzog), Special volume in honor of Melvin Hochster. Michigan Math. J. 57 (2008), 137–155.
- (27) *Structure theorems for a class of Gorenstein Artin Algebras of embedding dimension four*, (with Sabine El Khoury) Communications in Algebra 37 ( 2009), no.9, 3259-3277.
- (28) *Asymptotic growth of algebras associated to powers of ideals*,(with S. D. Cutkosky and J. Herzog) Math. Proc. Camb. Phil. Soc. 148 ( 2010), no 1, 55-72.
- (29) *Free Resolutions and Graph Theory* Proc. National Symposium on Mathematical Methods and Applications 2008, 1-13.
- (30) *Lectures on Multiplicity Conjectures* Lecture notes for the conference : Resolution of Singularities, Multiplicity Conjectures and Toric Geometry, IIT, Madras, 2009
- (31) *Minimal Free Resolutions for Certain Affine Monomial Curves*(with P. Gimenez, I. Sengupta), AMS Contemp. Math.Vol 555 ( 2011)
- (32) *Betti Numbers and Resolutions of Semigroup Rings*, Proceedings of the 7th Japan-Vietnam joint Seminar on Commutative Algebra, (2011) 78-86
- (33) *On Unimodality of Hilbert Functions of Gorenstein Artin Algebras of Embedding Dimension Four* With Sumi Seo, Comm. in Algebra, Volume 40, Issue 8, August 2012, pages 2893-2905arxiv. 1011.2732v1.
- (34) *Minimal Graded Free Resolutions for Monomial Curves Defined by an Arithmetic Sequence* (with P. Gimenez, I. Sengupta ), J. Algebra 388(2013), 294-310. arXiv:1108.3203v1.
- (35) *Gorenstein Hilbert Coefficients* (with S. El Khoury),J.Comm. Alg (2013), no. 2 179-207. arxiv:1201.5575v3
- (36) *Periodic Occurrence of Complete Intersection Monomial Curves* (with A.V. Jayanthan), Proc. AMS 141(2013) 12. 4199-4208. arxiv:1203.1991
- (37) *A note on Gorenstein Monomial Curves* ( with P. Gimenez), Bull. Braz. Math. Soc. (N.S.) 45 (2014), no. 4, 671678.
- (38) *Bounds for Multiplicities of Gorenstein Algebras*(with S. El Khoury and M. Kummini), Proc. AMS 143 (2015) no1, 121-128 arxiv: 1211.1316
- (39) *On the number of generators of ideals defining Gorenstein Artin algebras with Hilbert function  $(1, n + 1, 1 + \binom{n+1}{2}, \dots, \binom{n+1}{2} + 1, n + 1, 1)$*  (with Sabine El Khoury and A.V. Jayanthan), Beitrge zur Algebra und Geometrie, 57( 2016) no1, 173-187 arxiv:1304:0305,
- (40) *A note on the Subadditivity problem for maximal shifts in free resolutions* (With J. Herzog), Commutative algebra and noncommutative algebraic geometry. Vol. II, 245249, Math. Sci. Res. Inst. Publ., 68, Cambridge Univ. Press, New York, 2015.
- (41) *A note on the Subadditivity of Gorenstein Algebras* (with Sabine El Khoury), Journal of Algebra and Applications, 16 (2017) no 9. 5 pp.
- (42) *The Structure of the Minimal free Resolutions of semigroup Rings obtained by Gluing*,( with P. Gimenez) J. Pure Appl. Algebra 223 (2019), no. 4, 14111426.
- (43) *Mixed Multiplicities of Filtrations*, (With S.D. Cutkosky and P.Sarkar) Transactions of the AMS, January 2019

## Books

*Commutative Algebra and Algebraic Geometry, Proceedings of the First joint meeting of the American and Indian Mathematical Societies*, Edited by Sudhir Ghorpade, Hema Srinivasan and Jugal Verma. Contemporary Mathematics, 390. American Mathematical Society, Providence, RI, 2005. xiv+173 pp. ISBN: 0-8218-3629-3 13-06 (14-06)

## Invited Talks

- (1) Seminar Talk: Michigan State University, October 1986 (3 talks) Title: Algebra Structures on some canonical resolutions
- (2) Seminar Talk: Michigan State University, Spring 1987 (3 talk) Title: Basic element theory
- (3) Seminar Talk: Michigan State University, Winter 1988 (2 talks)
- (4) AMS Meeting - Special session in Commutative Algebra, Knoxville, Tennessee, March 1988 Title: Ranks of Syzygies of Perfect Modules
- (5) Colloquium Talk: Louisiana State University, February 1988 Title: Resolutions and Algebra Structures
- (6) Colloquium Talk: University of Missouri-Columbia, March 1988 Title: Free Resolutions and their Algebra Structures
- (7) Seminar Talk: Purdue University, September 1988 Title: Minimal Algebra Resolutions for Huneke-Ulrich ideals
- (8) Seminar Talk: Purdue University, March 1989 Title: An Intrinsic Criterion for Isomorphism of Singularities I
- (9) Seminar Talk: Purdue University, March 1989 Title: An Intrinsic Criterion for Isomorphism of Singularities II
- (10) Special session in Commutative Algebra, AMS meeting, Manhattan, Kansas, March 1990 Title: On the non-existence of minimal algebra resolutions despite the vanishing of Avramov obstructions
- (11) Colloquium Talk: Washington University, December 4, 1990 Title: Algebra Structures on Resolutions
- (12) Colloquium Talk: Tata Institute of Fundamental Research, Bombay, February, 1991 Title: Algebra Structures on Resolutions
- (13) Colloquium Talk: SPIC Science Foundation, Madras, February 1991 Title: Obstructions to the existence of Multiplicative Structures on Resolutions
- (14) Colloquium Talk: Institute of Mathematical Sciences, Madras, April 18, 1991 Title: Pfaffians and Multiplicative Structures
- (15) Special Session in Commutative Algebra, AMS Orono mathfest, Orono, Maine, August 1991 Title: On finite generation of Symbolic Algebras of Monomial Primes
- (16) Special Session in Commutative Algebra, AMS meeting, Fargo, ND, October 1991 Title: Local Fundamental Groups of Surface Singularities in Characteristic  $p$
- (17) Special Session in Commutative Algebra, AMS meeting, Springfield, MO, March 1992 Title: Resolutions of Gorenstein Algebras
- (18) Colloquium Talk: University of Arkansas, April 20, 1992 Title: Minimal Algebra Resolutions
- (19) AMS-IMS-SIAM Joint Summer Research conference, Commutative Algebra-Syzygies, Multiplicities and Birational Algebra, Mt. Holyoke, July 4-9, 1992 Title: Algebra Structures for Homogeneous Free Resolutions

- (20) Algebra Seminar: Purdue University, Nov 1992 Title: Algebra Structures for graded free Resolutions
- (21) Colloquium: SPIC Science Foundation, June 1994 Title: Finite Determinacy of Mappings
- (22) Colloquium: Indian Institute of Technology, Madras, July 1994 Title: Finite Determinacy of Mappings
- (23) Colloquium: Ramanujan Institute of Advanced Study in Pure Mathematics, Madras, July 1994 Title: Free Resolutions and Multiplicative Structures
- (24) Commutative Algebra- Satellite conference to the International Congress, ICM 94, Vechta Germany, July 1994 Title: Finite Determinacy of Mappings
- (25) Special Session in Commutative Algebra, AMS meeting, San Francisco, CA, January 1995  
Title: A new criterion for isomorphism of singularities
- (26) Special Session in Commutative Algebra, AMS meeting, Orlando, Florida, March 1995 Title: Finite determination of mappings
- (27) Algebra Seminar: University of Essen, Essen, Germany, June 1995  
Title: Finite determinacy - some questions
- (28) Colloquium: Institute of Mathematical Sciences, Madras, India, July 1995  
Title: Criteria for isomorphism of singularities
- (29) Colloquium: Ramanujan Institute of Advanced Studies in Pure Mathematics, University of Madras, Madras, India, July 1995  
Title: Resolutions and Multiplicities
- (30) Special Session in Commutative Algebra, AMS meeting, Kent, Ohio, Nov. 1995  
Title: Bounds on multiplicity
- (31) Special Session in Commutative Algebra, Ams meeting, Orlando, Florida, Jan. 1996 Title: Hilbert Functions and Multiplicity
- (32) Kommutative Algebra und Algebraische Geometrie, Oberwolfach, Germany, May 5-11, 1996, 45 minute talk.  
Title: Bounds for multiplicity
- (33) Algebra Seminar: University of Essen, Essen, Germany, May 1996  
Title: Multiplicities
- (34) Joint AMS-MAA-AWM summer meeting, Seattle Mathfest, Research Session in Commutative Algebra, August 1996  
Title: Multiplicities of Gorenstein Algebras
- (35) 34. Rt 81 conference, SUNY, Albany, OCT 27-28, 1996  
Title: Resolutions of Gorenstein Algebras
- (36) Commutative Algebra, CNRS, Luminy. France May 4-9, 1997  
Title: Some Identities associated to homogeneous resolutions
- (37) Organizer (with Irena Peeva) of Special session in Commutative algebra, AMS meeting in Montreal, Canada, Sept. 26-28, 1997
- (38) Commutative Algebra, Representation Theory and Combinatorics - A Conference in honor of David Buchsbaum, at Northeastern University, Boston, Oct 18-20, 1997. (Plenary Talk)  
Title: A Question on Determination
- (39) Special Session on Commutative Algebra, Joint AMS-MAA-SIAM meeting, Baltimore, MD January, 1998 Title: A Question on Finite Determination
- (40) Panel member on the AWM panel discussion on Women in Mathematics from around the world, Baltimore, MD, January 1998.



- (41) Conference on Homological Methods, Genoa, Italy, June 12, 1998 (Plenary 50 minute talk) Title: Computation of Algebraic Fundamental Group of a Curve Singularity
- (42) Conference on Schur and Weyl Modules, Genoa, Italy, June 14, 1998(Plenary 50 minute talk) Title: Algebra structures on resolutions
- (43) Colloquium Talk, Tata Institute of Fundamental Research, Bombay, India, June 23, 1998 Title: Bounds for Multiplicities of Graded Algebras
- (44) Colloquium Talk, SPIC Science Foundation, Madras, India, July 14, 1998, Title: Algebraic Fundamental Group of a Curve Singularity
- (45) Colloquium Talk, Indian Institute of Technology, Bombay, India, July 20, 1998 Title: Conjectures on Multiplicities of graded algebras
- (46) Special Session on Commutative Algebra, AMS meeting, Chicago, September 12-13, 1998 Title: Algebraic Fundamental Group of a Curve Singularity
- (47) Special Session in Commutative Algebra and Algebraic Geometry, AMS meeting, San Antonio, January 15 - 16, 1999, Title: Local Fundamental Group of a Curve Singularity
- (48) Conference on Commutative Algebra and Algebraic Geometry, Univ. Messina, Sicily, Italy, June 16 - 19, 1999, Title: "A Question of Finite Determination"
- (49) Olga T Todd Celebration, AWM conference in MSRI Berkely, July, 1999. Title: "Mentor for post-doctoral participants"
- (50) Kommutative Algebra and Algebraische Geometrie, Oberwolfach, Germany, August 8 - 14, 1999, Title: Algebraic Fundamental Group of Curve Singularity
- (51) Algebra Day, University of Kansas, Lawrence, KS Sept 14 Title: "Detecting Koszul Complexes"
- (52) Colloquium talk, Indian Institute of Science, Bangalore, India, Dec. 7, 1999, Title: Algebra Structures on Free Resolutions
- (53) Colloquium talk, Mehta Research Institute of Mathematics and Mathematical Physics, Allahabad, India, Dec. 14, 1999, Title: Algebra Structures on Free Resolutions
- (54) Organizer ( with Irena Peeva, Special Session in Commutative Algebra and Algebraic Geometry at the joint AMS-MAA-AWM National Meeting, Washington DC Jan 2000
- (55) Algebra Seminar, North Eastern University, February 7, 2000, Title: Bounds for Multiplicities
- (56) AMS Meeting, Special Session in Commutative Algebra and Algebraic Geometry, Lowell Massachusetts, March 30, 2000, ( 45 minute talk) Title: "Finite Determination of Infinite Complexes"
- (57) Algebra Seminar: Michigan State University, April, 2000, Title: "Lifting Isomorphism of Complexes"
- (58) Centennial Celebration: Conference at University of Nebraska, May 29, 2000, Title: "Isomorphism of Complexes and Lifts"
- (59) Algebre Commutative et Geometrie Algebrique, CIRM, Luminy, France, June 4-9, 2000, Title: "Lifting Isomorphisms of Complexes "
- (60) Algebra Seminar University of Valladolid, Spain, July 17, 2000, Title: " Isomorphism of Complexes and Lifts"
- (61) AMS Meeting, Special Session on Commutative Algebra and Algebraic Geometry, Toronto, Canada, Sept 23-23, 2000 Title: "Gorenstein Artin algebras of Codimension Four"
- (62) AMS Meeting, Special Session on Commutative Algebra, Lawrence, Kansas, March 2001 "Gorenstein Artin Algebras"

- (63) University of Messina, June 2001 ( a series of two talks Title: "Multiplicities, Hilbert Functions and Regularity I and II"
- (64) AMS Special Session in Commutative algebra, Williamstown, MASS, Oct 12-13, 2001, Title: "Gorenstein Artin Algebras"
- (65) Conference in algebraic geometry Annapolis, MD Oct 25-28, 2001, Title: "Gorenstein Artin Algebras"
- (66) Colloquium Talk: University of Kentucky, Nov,2001 Title: Hilbert Functions and Goresntein sequences.
- (67) Colloquium Talk: Washington University, NOv 2001 Title: Gorenstein Artin Algebras.
- (68) International Conference on Algebra and Geometry, University of Hyderabad, Hyderabad, India, December 7 - 12, 2001, "Resolutions of Gorenstein Algebras"
- (69) Joint AMS-MAA-SIAM meeting in San Diego, CA, Jan 6-9, 2002 Lead the focus group discussion for the committee on meetings and conferences and was the mentor for two women in the AWM workshop.
- (70) AMS meeting, Ann -Arbor, Michigan, Special Session in Commutative Algebra, March 1- 3, 2002, Title: "Multiplicities of Monomial ideals".
- (71) Commutative Algebra Days, Nebraska, March 16, 2002, Title: "Multiplicities of Monomial Ideals".
- (72) Algebra Seminar, Universitaet Essen, July 2002 Title: Taylor bound for the multiplicity.
- (73) MSRI Commutative Algebra seminar, MSRI, Berkeley, Oct 2002, Title: "Monomial almost complete intersections".
- (74) Colloquium talk: Indian Institute of Techonology, IIT, Madras, India, November 2003 Title: "Free Resolutions, Multiplicities and Anti chains".
- (75) Texas A and M University, Algebra seminar, Feb 20, 2003, Title: "Conjectures on Multiplicities".
- (76) International conference on Commutative Algebra, Lisbon, Portugal, June 2003 (Plenary Lecture) Title: "Multiplicities of Monomial Ideals".
- (77) KUMUNU, (Algebra Day, Lawrence Kansas, Sept. 20, 2003, Title: "Asymptotic Lengths of Local Cohomology Modules".
- (78) AMS meeting in Tallahassee, Florida Special Session on Syzygies and Hilbert Functions, March 12-13, 2004. Title: Multiplicity Bounds
- (79) AMS Special session in commutative algebra and algebraic geometry, Lawrensville, NJ, Special Session on Algebraic Geometry and Commutative Algebra, April 16-17, 2004.  
Title: Asymptotic Bounds for Local Cohomology Modules
- (80) Sixth International Joint meeting of the AMS and Mexican Math. Societies, Houston, Texas, May 15-17, 2004, AMS special session on Homological Methods.  
Title: Multiplicity bounds for ideals linked to complete Intersections.
- (81) AMS Meeting in Nashville, TN, Special Session on Algebraic Geometry and Commutative Algebra, October 17- 19, 2004  
Factorization of Matrices and Birational Maps
- (82) Joint AMS-MAA National Meeting in Atlanta, GA, January 4-7 2005, Special session on Commutative algebra and algebraic geometry  
title: Controlled Matrix Factorizations and Birational Maps
- (83) Colloquium talk: University of Nebraska, Lincoln, NE, March 4, 2005  
Title: Controlled Matrix Factorizations and Birational Maps
- (84) Colloquium Talk: Tulane University, March 28, 2005

- Title: Multiplicity Bounds
- (85) Special Session on Hilbert Functions” in the International meeting off the AMS, Germany, June 2005  
Title: Multiplicity Conjectures - Some Recent Results.
- (86) Seminar: University of Barcelona, Spain, June, 16, 2005  
Title: Multiplicity Conjectures
- (87) Colloquium: Indian Institute of Technology, Bombay, India, July 5, 2005  
Title: Almost complete Intersection Ideals
- (88) Commutative Algebra Conference honoring Phillip Griffith, Urbana, Il, Sept 17, 2005  
Title: Some Recent Results on Multiplicity Conjectures
- (89) MAGIC - Midwest Algebra, Geometry and Interactions conference, Notre Dame, Oct 9, 2005  
Title: Multiplicity Bounds
- (90) Combinatorial Algebraic Geometry, AMS Special session, Notre Dame, April 2006  
Title: Taylor Bound for Multiplicity
- (91) Commutative algebra and Algebraic Geometry, CIRM, Luminy, France, June 2006  
Title: Gorenstein Algebras of Codimension Four
- (92) Work shop on Syzygies and Hilbert Functions Banff Research Station, Canada, October 2006  
Title: Structure of the resolution of a class of Codimension Four Gorenstein Artin algebras
- (93) Hilbert Functions and Syzygies in commutative algebra and combinatorics, ( in honor of Juergen Herzog) (Italy) from 16 to 22 September 2007.
- (94) Colloquium, Cleveland State University, April 13, 2007  
Title: Graded Resolutions, Multiplicities and Graphs
- (95) Seminar talk: Cornell University, March 2008  
Title: Resolutions of Monomial Primes
- (96) Plenary Speaker: Ramanujan’s Day Symposium, I.I.T., Madras, India, December 22, 2008  
Title: Free Resolutions and Graph Theory
- (97) Lecture Series : Golden Jubilee Workshop on Multiplicity conjectures, Resolution of Singularities and Toric Geometry I.I.T, Madras, Dec-Jan 2008-2009  
Title: Lectures on Multiplicity Conjectures
- (98) AMS Special Session, University of Illinois, March 2009  
Title: Generators for Monomial Primes
- (99) Geometric and Combinatorial Aspects of Commutative Algebra, University of Messina, Italy, Sept 16-19, 2009  
Title: Resolution of a Gorenstein determinantal Ideal.
- (100) GSSCCF Commutative Algebra Meeting, January 23-24 2010  
Title: Gorenstein determinantal Ideals
- (101) Colloquium: Cleveland State University, April 9, 2010  
Title: Resolutions of certain Binomial Ideals
- (102) Seminar: University of Valladolid, Spain, July 20, 2011  
Title: Periodicity of Betti Numbers of Monomial Curves
- (103) Seminar: Chennai Math Institute, India, August 2011  
Title: Betti Numbers of Monomial Curves
- (104) AMS Special Session, Utah, October 22, 2011  
Title: Betti Numbers of Affine Monomial Curves

- (105) Japan-Vietnam Seminar, Quy Nhon, Vietnam, December 2011  
Title: Betti Numbers and Resolutions of Semigroup Rings
- (106) AMS Special Session, Combinatorial Commutative Algebra, Lawrence, Kansas, March 2012  
Title: Bounds for Gorenstein Hilbert Coefficients
- (107) AMS Special Session, Algebraic Geometry and its Applications, Lawrence, Kansas March 2012  
Title: Complete Intersection Semigroup Rings
- (108) Plenary Talk in International conference in honor of Abhyankar's Birthday - July 2012 at Purdue University,  
Title: Number of Equations needed to define Monomial Curves.
- (109) Chennai Math Institute: August 2012: Colloquium  
Title: When are Gorenstein Ideals determinantal?
- (110) Indian Inst. of Technology, Madras, Sept 13, 2012: Colloquium  
Title: Gorenstein determinantal Ideals
- (111) IIT - Kanpur . Sep 2012 Colloquium:  
Title: A conjecture on Monomial curves
- (112) IIT- Kanpur: Sept 2012 Talk to the grad students:  
Title: Some open problems in Commutative Algebra.
- (113) University of Valladolid: November, 2012 Seminario  
Title: What makes Ideals determinantal and Gorenstein
- (114) Universidad of Autonoma de Madrid, November 2012, Seminar  
Title: Eventual Periodicity of Number of generators of Monomial curves under translation
- (115) Erwin Schroedinger International Institute, Vienna, Austria, November 2012  
Title: Resolutions of Monomial Curves
- (116) Syzygies and Resolutions: International Conference, Chennai, 2012: Plenary talk  
title: Minimal resolutions of Semi group Rings.
- (117) MSRI, Berkeley, Algebra Colloquium, February 2013  
Title: Periodicity of Betti Numbers of Semigroup Rings
- (118) AWM Research Symposium, Santa Clara University, Ca, March 2013  
Title: Betti Numbers of Monomial Curves
- (119) Texas Tech University, Colloquium, November 2013  
Title: Resolutions of powers of determinantal ideals
- (120) Nagpur University, International Conference on Recent Advances in Mathematics, January 22-23, 2014, Plenary Speaker  
Title: Free Resolutions in Commutative Algebra
- (121) Chennai Math Institute, Seminar talk, January 2014  
Title: Subadditivity of Maximal Shifts in Resolutions
- (122) Indian Institute of Technology Bombay, Seminar, January 2014  
Title: On Resolutions of Powers of Determinantal Ideals
- (123) University of Utah, April 2015  
Title: Unimodality of Hilbert Functions
- (124) Universidad of Autonoma de Madrid, June 2015  
Title: Unimodality of Hilbert Functions
- (125) KUMUNU 2015, October 25, 2015  
Title: Subadditivity of Maximal shifts in Minimal Resolutions
- (126) AMS special session, Eastern sectional meeting, Rutgers U, Nov 14-15, 2015  
Title: On Subadditivity of Maximal shifts in minimal resolutions

- (127) AMS Special Session, Central sectional meeting, Fargo, North Dakota, April 2016  
Title: A class of Gorenstein Monomial Curves
- (128) IIT Gandhinagar, Colloquium June 14, 2016  
Title: Subadditivity problem for maximal shifts in the resolutions
- (129) IIT Bombay, Seminar July 4, 2016  
Title: Hilbert Functions of Graded Artinian Algebras
- (130) XXI Coloquio Latino americano de Algebra, Session on Homological Methods, July 25- July 30, 2016  
Title: On Unimodality of Hilbert Functions of Graded Artin Algebras
- (131) 24th Brazilian Algebra Meeting, Thematic session on Algebraic Geometry and Commutative Algebra, August 1-6, 2016  
Title: Gorenstein Monomial Curves
- (132) Asymptotic Phenomenon in Local Algebra and Singularity Theory, Oberwolfach, December 11-16, 2016  
Title: Affine Monomial Curves
- (133) Symposium, Joint meeting of the American Math Society and Ramanujan Math Society, BHU, Varanasi, December 16-18, 2016  
Title: Gorenstein Monomial Curves
- (134) Public Lecture, MU India Day: January 28, 2017  
Title: Beauty or Utility? Why I love Mathematics!
- (135) AMS Special Session on Commutative Algebra, Bloomington, Indiana, April 1-3, 2017  
Title: Inverse systems, Hilbert Function and  $\mu$  - generic Artin Algebras.
- (136) Universidad Autonoma, Madrid, June 6, 2017  
Title: Generating Graded Cohen-Macaulay Algebras
- (137) University of Valladolid, June 2017  
Title: Hilbert Functions and  $\mu$  generic Artin Algebras
- (138) Seminar, Meiji University, Tokyo, Japan, July 2017  
Title: Resolutions of Numerical Semigroup Rings.
- (139) SLAM (Southwest Local Algebra Meeting) 2018, February 24-25, 2018.  
Title: Minimal graded Resolutions of Monomial Curves
- (140) ALaNT (Algebra, Logic and Number Theory) 2018, Banach Center, Bedlewo, Poland, June 23-28  
Title: Resolutions of Semigroup Rings
- (141) Colloquium, Chennai Math Institute, Oct 15  
Title: Minimal Resolutions of Monomial Curves
- (142) Colloquium, Institute of Mathematical Sciences, Chennai, India, October 17, 2018  
Title: Gorenstein Monomial Curves
- (143) Colloquium, Indian Institute of Technology, Madras, Oct 25  
Title: Hilbert Functions of Graded Algebras
- (144) Seminar, Indian Institute of Technology, Bombay  
Titles: Mixed Multiplicities
- (145) Colloquium, Indian Institute of Technology, Bombay  
Title: Resolutions of Semigroup Rings
- (146) 84th Annual conference of Indian Mathematical Society, November 27- 30, 2018
- (147) Colloquium, Inst. Science, Education and Research, Mohali, India  
Title: Principal Matrix of a Monomial Curve and What it says about the Curve

- (148) Seminar, IIT-Gandhinagar  
Title: Semigroup Rings
- (149) Singularities and Homological Aspects of Commutative Algebra, Oberwolfach,  
Feb 2019
- (150) Universidad de Valladolid, February 26, 2019  
Title: Gluing and Cylinders
- (151) University of Paris, March 12, 2019  
Title: A gluing operation on Semigroup Rings
- (152) AWM Research Symposium, April 2019  
Title: Structure of Semigroups and their Resolutions.

### Teaching:

I have taught a variety of undergraduate and graduate courses at different Universities. At MU, I have taught undergraduate courses starting from freshman calculus at all levels through Abstract Algebra. Over the last 15 years, have taught Abstract Algebra and Linear Algebra courses in writing intensive format. This forms a part of the undergraduate education requirement at the University of Missouri. The students in these classes are majors in various engineering programs, mathematics, physics, chemistry and secondary education.

Graduate Courses taught at MU: First year Algebra sequence, Commutative Algebra and Algebraic Geometry as well as topics courses on Homological Algebra, Syzygies and Advance topics in commutative algebra.

### Algebra Seminar at MU

For the past 21 years, I have been the organizer of the algebra seminar at MU. Most of the seminars are announced on the math department web site. I have also regularly given talks in the Algebra Seminar at MU which are not listed in the invited talks.

### Selected Service to the Professional societies

I served on the AMS committee for the Summer research conferences (SRCC) 2000-2004 and on the Committee, Nominating Committee (2006-2009) on meetings and conferences (COMC) from 200-2003. I have frequently served as a mentor as part of the AWM mentorship program as well as the Advance Program at MU for various post doctoral and new women faculty.

### Selected service at Missouri

I have served on many divisional and Campus committees including the Graduate Faculty Senate, Campus writing Board, Arts and Science Committee on the Status of Women, Chancellors committee on the status of Women ( two 3-year period. chaired a year), Advisory committee for faculty developmental leaves, the Campus committee for Promotion and Tenure, Minority Affairs Committee, Tenure Probationary extension committees, Honorary Degree Committee and Arts and Sciences Scholarship Committee, Student Conduct Committee, A&S Diversity Committee