

CURRICULUM VITAE OF J. K. VERMA

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Addresses

Office Address	Home Address
Prof. J. K. Verma	B-283, Nilgiri, Central Area
Department of Mathematics	Indian Institute of Technology
Indian Institute of Technology	Powai, Mumbai 400 076

Education

M. Sc. 1981 Birla Institute of Technology and Science, Pilani, Rajasthan.
Ph. D. 1987 Purdue University (West Lafayette, USA)

Thesis : Unmixed local rings, symbolic topology of ideals and quasi-factorial domains
Adviser : Prof. William Heinzer

Professional experience

1981-1987	Teaching Assistant	Purdue University
1986-1987	David Ross Fellow	Purdue University
1987-1989	V. Assistant Professor	University of Kansas
1989-1990	Assistant Professor	Louisiana State University
1990-1990	Lecturer	IIT Bombay
1990-1994	Assistant Professor	IIT Bombay
1994-1998	Associate Professor	IIT Bombay
1998-	Professor	IIT Bombay
2006-2009	Professor & Head	IIT Bombay
2011-2012	Chief Vigilance Officer	IIT Bombay
2012-	Professor (HAG)	IIT Bombay
2014-	Dean (Faculty Affairs)	IIT Bombay

Awards and Honours

- Fellow of International Centre for Theoretical Physics, 2001-2007.
- Fellow of National Academy of Sciences, Allahabad, elected in 2008.
- Fellow of Indian National Science Academy, New Delhi, elected in 2012.
- Ramanujan Memorial Award Lecture, Indian Mathematical Society, 2013.

Doctoral students guided

Clare D'Cruz	C-M Rees Algebras and Fiber Cones with Minimal Multiplicity (1998)
A. V. Jayanthan	Hilbert coefficients and depth of blowup algebras (2003)
Mousumi Mandal	On the Chern Number of an Ideal (2011)
Shreedevi Masuti	Normal Hilbert Coefficients and Bigraded Rees Algebras (2013)
Parangama Sarkar	Local Cohomology of Multi-Rees Algebras and Hilbert Functions of Multi-graded filtrations of Ideals (2016)

Publications

1. *Variations on the Grothendieck-Serre formula for Hilbert functions and their applications*, Proceedings of the International Conference on Algebra and its Applications held at Aligarh Muslim University, 15-17 December, 2014 (with Shreedevi Masuti and Parangama Sarkar)
2. *Local cohomology of multi-Rees algebras, joint reduction numbers and product of complete ideals*, Submitted (with Parangama Sarkar)
3. *Postulation and reduction vectors of Hilbert functions of multi-graded filtrations of ideals*, J. Commutative Algebra, to appear (with Parangama Sarkar)
4. *Hilbert polynomials of multigraded filtrations of ideals*, Journal of Algebra 444 (2015), 527-566 (with Shreedevi Masuti and Parangama Sarkar).
5. *Local cohomology of multi-graded Rees algebras with applications to joint reductions and complete ideals*, Acta Mathematica Vietnamica 40 (2015), 479-510. (with Shreedevi Masuti and Tony Puthenpurakal).
6. *Two notes on the normal Hilbert polynomial of two ideals*, Proc. Indian Natn. Sic. Acad. 80 (2014), 589-595. (with Shreedevi Masuti).
7. *Local cohomology of bigraded Rees algebras and normal Hilbert coefficients*, Journal of Pure and Applied Algebra 218 (2014), 904-918 (with Shreedevi Masuti).
8. *R. P. Stanley's solution of the Anand-Dumir-Gupta conjectures about magic squares*, Math. Student 82 (2013), 1-15.
9. *Nonnegativity of normal Hilbert coefficients*, Journal of Commutative Algebra, 5 (2013), 281-298 (With Shreedevi Masuti).
10. *Normal Hilbert polynomials*, Proceedings of *International Conference on Commutative Algebra and Algebraic Geometry*, Indian Institute of Science, Bangalore (2012), Ramanujan Mathematical Society Lecture Notes Series, Vol. 17 (2013), 139-166 (with Shreedevi Masuti and Mousumi Mandal).
11. *On the Chern number of I -admissible filtration of ideals*, Journal of Commutative Algebra 4 (2012), 1-13 (with Mousumi Mandal).
12. *Local Cohomology of bigraded Rees algebras and normal Hilbert coefficients*, 34th Japan Symposium on Commutative Algebra, Hayama, Japan (2012) (with Shreedevi Masuti).
13. *Some conjectures about the Chern numbers of filtrations*, J. Algebra, 325 (2011), 147-162. (with M. Mandal, B. Singh)
14. *Negativity of the Chern number of parameter ideals*, Proceedings of *International Conference on Algebra and its Applications*, Aligarh Muslim University, 2010 Narosa Publishing House, New Delhi (2011), 53-68 (with S. Goto and M. Mandal).
15. *Hilbert functions of multigraded algebras, mixed multiplicities of ideals and their applications*, Journal of Commutative Algebra, vol. 2, no. 4, (2010), 515-565. (with N. V. Trung)
16. *On the Chern number of an ideal*, Proc. Amer. Math. Soc. 138 (2010), 1995-1999. (with Mousumi Mandal)
17. *Hilbert polynomials and powers of ideals*, Math. Trans. Camb. Phil. Soc. 145 (2008) 623-642. (with J. Herzog and T. J. Puthenpurakal).
18. *Mixed volumes versus mixed multiplicities*, Trans. Amer. Math. Soc. 359 (2007), 4711-4727. (with N. V. Trung).

19. *Hilbert Coefficients and depth of the associated graded ring of an ideal*, Mathematics Student, Special Centenary Volume, 76 (2007) 237-264
20. *Hilbert coefficients and depth of the associated graded ring of an ideal*, Math. Student, Special Centenary volume, (2007) 205 -228.
21. *Fiber cones of m -primary ideals*, Canadian J. Math. 59(2007),109-126. (with A. V. Jayanthan and T. Puthenpurakal).
22. *Hilbert Coefficients and Depth of Fiber Cones*, J. Pure Appl. Algebra, (2005), 97-115. (with A. V. Jayanthan)
23. *Cohen-Macaulay fiber cones of almost minimal multiplicity*, Nagoya J. Math.177(2005), 155-179.(with A. V. Jayanthan).
24. *Bounds on the a -invariant and reduction numbers of ideals*, J. Algebra, 274 (2004), 594-601. (with C. D'Cruz).
25. *Hilbert coefficients and depth of form rings*, Comm. in Algebra. 32 (2004), 1445-1452. (with B. Singh and A.V. Jayanthan).
26. *Local cohomology modules of bigraded Rees algebras*, Advances in algebra and geometry (2003), 39-52. (with A. V. Jayanthan)
27. *Grothendieck-Serre formula and bigraded Rees algebras*, J. Algebra 254 (2002), 1-20. (with A. V. Jayanthan).
28. *Hilbert series of fiber cones with almost minimal mixed multiplicity*, J. Algebra 251 (2002), 98-109. (with C. D'Cruz).
29. *On a theorem of Macaulay on colons of ideals*, Beitrage Algebra Geom. 43 (2002), no. 2, 579-581.
30. *On the number of generators of Cohen-Macaulay ideals*, Proc. Amer Math. Soc. 128 (2000), 3185-3190. (with C. D'Cruz)
31. *Cohen-Macaulay fiber cones*, Commutative Algebra, Algebraic Geometry and Computational Methods (Hanoi 1996) Springer-Verlag, (1999), 233-246. (with C. D'Cruz and K. N. Raghavan)
32. *Mixed Hilbert coefficients of ideals generated by d -sequences and quadratic sequences*, J. Algebra 193 (1997), 211-232. (with K. N. Raghavan,)
33. *Local cohomology of Rees algebras and Hilbert functions*, Proc. Amer. Math. Soc. 123 (1995), no.1, 1-10. (with B. Johnston)
34. *On the multiplicity of blow-ups associated to almost complete intersection space curves*, Comm. Algebra 22 (1994), 721-734. (with D. Katz)
35. *Multigraded Rees algebras and mixed multiplicities*, J. Pure Appl. Algebra 77 (1992), 219-228.
36. *On the length formula of Hoskin and Deligne and associated graded rings of two-dimensional regular local rings*, Math. Proc. Cambridge Philos. Soc. 111 (1992), 423-432. (with B. Johnston)
37. *Hilbert functions of bigraded algebras*, Commutative algebra (Trieste, 1992), 291-302, World Scientific, 1994. (with D. Katz and S. Mandal)
38. *Rees algebras of contracted ideals in two-dimensional regular local rings*, J. Algebra 141 (1991), no. 1, 1-10.
39. *Joint reductions and Rees algebras*, Math. Proc. Cambridge Philos. Soc. 109 (1991), no. 2, 335-342.
40. *Joint reductions of complete ideals*, Nagoya Math. J. 118 (1990), 155-163.
41. *Rees algebras with minimal multiplicity*, Comm. Algebra 17 (1989), 2999-3024.
42. *Rees algebras of parameter ideals*, J. Pure Appl. Algebra 61 (1989), no. 1, 99-106.
43. *Extended Rees algebras and mixed multiplicities*, Math. Z. 202 (1989), 111-128. (with D. Katz)
44. *On quasi-factorial domains*, J. Pure Appl. Algebra 57 (1989), no. 1, 93-107.
45. *Rees algebras and mixed multiplicities*, Proc. Amer. Math. Soc. 104 (1988), 1036-1044.
46. *On the symbolic topology of an ideal*, J. Algebra 112 (1988), 416-429.
47. *On ideals whose adic and symbolic topologies are linearly equivalent*, J. Pure Appl. Algebra 47 (1987), 205-212.

Edited Books and Conference Proceedings

1. (coedited with A. R. Shastri, M. K. Srinivasan and S. R. Ghorpade), Combinatorial Topology and Algebra, RMS Lecture Notes Series Vol. 18, Ramanujan Mathematical Society, Mysore, 2013.
2. Commutative algebra and combinatorics. Proceedings of the International Workshop and Conference on Computational Algebraic Geometry held in Allahabad, December 8-13, 2003. Edited by R. V. Gurjar, S. A. Katre, Ravi A. Rao and J. K. Verma. Ramanujan Mathematical Society Lecture Notes Series, 4. Ramanujan Mathematical Society, Mysore, 2007.
3. (coedited with Hema Srinivasan and S. R. Ghorpade), Commutative Algebra and Algebraic Geometry, Contemporary Mathematics Vol. 390, American Mathematical Society, Providence, 2005.
4. Advances in algebra and geometry. Dedicated to C. S. Seshadri, M. S. Narasimhan, R. Sridharan, K. R. Parthasarathy, S. Ramanan and M. S. Raghunathan. Proceedings of the 4th Annual International Conference (CAAG) held at the University of Hyderabad, Hyderabad, December 7-12, 2001. Edited by C. Musili, W. Decker and J. K. Verma. Hindustan Book Agency, New Delhi, 2003.

Papers presented in conferences and symposia

1. *Normal Hilbert Polynomials*, COCOA Workshop and International Conference, IIT Gandhinagar, 28 February, 2016.
2. *Local Cohomology of Multi-Rees algebras, Joint Reductions of Multi-graded Filtrations of Ideals and Completeness of Products of Complete Ideals*, KUMUNU-2015 University of Missouri, Columbia, MO, 24-25 October, 2015.
3. *Local Cohomology of Multi-Rees algebras and complete ideals*, 30th Annual Meeting of the Ramanujan Mathematical Society, IISER Mohali, 15-17 May 2015.
4. *Gröbner bases and polynomial equations*, First International Conference and Workshop on Commutative Algebra, Tribhuvan University, Kathmandu (Nepal) , 20-26 April, 2015.
5. *Real and Complex Solutions of Polynomial Equations*, Conference on Mathematical Analysis and Computation, MNIT Jaipur, 20-22 February, 2015.
6. *Complete Ideals and Modules: A survey*, Conference on Commutative Algebra and Algebraic Geometry, IIT Guwahati, 5-9 February, 2015.
7. *Local Cohomology of Rees Algebras and Complete Ideals*, Indo-UK Workshop on Commutative Algebra and Invariant Theory, Chennai Mathematical Institute, 12-14 January, 2015
8. *Product of Complete Ideals*, International Conference on Algebra and its Applications, Aligarh Muslim University, 15-17 December, 2014.
9. *Local Cohomology of Multi-Rees Algebras and Normal Hilbert Coefficients*, International Conference on Commutative Algebra and its interactions with Algebraic Geometry and Combinatorics in honour of N. V. Trung, Hanoi (Vietnam), 15-21 December, 2013.
10. *Polynomial Equations, Hilbert's Nullstellensatz and Newton Polytopes*, International Conference on History and Development of Mathematics, Jaipur, 29 November-1 December, 2013.
11. *On a Theorem of Rees*, Commutative Algebra and its Interactions with Algebraic Geometry, Luminy, France, 8-12 July 2013.
12. *Newton Polytopes and Polynomial Equations*, ATM Workshop and Conference and Complex Analysis and Related Topics, 15-20 March 2013, Central University of Rajasthan.
13. *Linear Diophantine Equations and Stanley's Solution of Anand-Dumir-Gupta Conjecture*, Conference on Commutative Algebra, Institute of Science (Mumbai), 25 January, 2013.
14. *Linear Diophantine Equations*, Ramanujan Memorial Award Lecture at the 78th Annual Conference of Indian Mathematical Society, 22-25 January 2013, BHU, Varanasi.
15. *Resolution of singularities and integral closure of ideals*, 27th Annual Meeting of the Ramanujan Mathematical Society, 20-23 October, 2012, New Delhi.
16. *Local Cohomology of Bigraded Rees Algebras and Normal Hilbert Polynomials*, Vietnam-France Joint Congress in Mathematics, 20-24 August, 2012, Hué City, Vietnam.

17. *Products of Complete ideals and a Theorem of Rees about Normal Hilbert Polynomials* III Indo-Brazil Symposium in Mathematics 13-17 August, 2012, IMPA, Rio de Janeiro, Brazil.
18. *Local Cohomology of Rees algebras, Complete Ideals and a Theorem of Rees*, National Symposium on Mathematics, Lucknow University, 2-4 Feb. 2012.
19. *Eigenvalues of Commuting Operators and Solutions of Polynomial Equations*, 26th Annual Meeting of Ramanujan Mathematical Society, Allahabad University, 2-5 October, 2011.
20. *On the vanishing and positivity of the coefficients of normal Hilbert polynomial*, Local Rings and Local Study of Algebraic Varieties, International Centre for Theoretical Physics, 6-12 June 2010.
21. *On the Chern number of an ideal*, plenary talk in the International Conference on Algebra and its Applications, Aligarh Muslim University, Aligarh, 20-22 Feb. 2010.
22. *Normal Hilbert polynomials*, invited talk in the 97th Indian Science Congress, Thiruvanthapuram, 3-7 Jan, 2010.
23. *Normal Hilbert polynomials*, Colloquium on Recent Trends in Algebra and Algebraic Number Theory (in honour of Professor. I.B.S. Passi on his 70th birthday) November 25th-27th, 2009.
24. *On the Chern number of an ideal*, National Conference on Commutative Algebra and Algebraic Geometry, IIT Madras, July 2009.
25. *On the Chern number of an ideal*, Annual Meeting of the Indian Mathematical Society, December 2008, University of Allahabad.
26. *Mixed Volumes and mixed multiplicities*, Annual Meeting of Ramanujan Mathematical Society, IIT Kanpur, May 2008.
27. *Mixed volumes of polytopes and Bernstein's Theorem*, Indo-Brazil Symposium in Mathematics, August 2008, Rio-de-Janeiro (Brazil).
28. *Hilbert polynomials and powers of ideals*, International Conference on Commutative Algebra, March 2008, Yokohama (Japan).
29. *Mixed Multiplicities, mixed volumes of polytopes and a new proof of Bernstein's theorem*, invited talk in the symposium on geometry and topology, 74th annual meeting of the Indian Mathematical Society, University of Pune, December, 2007.
30. *Hilbert functions of multigraded algebras, mixed multiplicities of ideals and their applications*, invited international distinguished talk, Fourth International Congress of Chinese Mathematicians, Hangzhou, China, December 2007.
31. *Hilbert coefficients and Cohen-Macaulay fiber cones* Commutative Algebra Workshop, University of Essen, November 20, 2006
32. *Solving systems of polynomial equations: theorems of Stickelberger and Bernstein*, National seminar in mathematics, M. S. University of Baroda, Vadodara, 4 March, 2006.
33. *Fiber cones of m -primary ideals*, International conference in commutative algebra, Institute of Mathematics, Hanoi (Vietnam), 2-6 Jan 2006.
34. *Hilbert coefficients and depth of fiber cones*, Sixth National meeting on Commutative Algebra and Algebraic Geometry, Institute of Mathematical Sciences, Chennai, 1-6 August, 2005.
35. *R. P. Stanley's solution of the ADG conjecture*, National symposium in memory of Hans-Raj Gupta, Panjab University, Chandigarh, 19-20 November, 2004.
36. *Hilbert coefficients and depth of form rings and fiber cones* International Conference on Commutative Algebra and Combinatorics, Harish-Chandra Research Institute, Allahabad, December 8-14, 2003.
37. *On two theorems of Macaulay*, Third National Meeting in Commutative Algebra and Algebraic Geometry, Indian Institute of Science, Bangalore, October 16- 21, 2000.
38. *Hilbert series of fiber cones*, Second National Meeting of Commutative Algebra and Algebraic Geometry, Mehta Research Institute, Allahabad, India, 1-6 February, 1999.
39. *Mixed multiplicities of ideals : A survey : 1928-1998*, Conference on Commutative Algebra in honour of David Rees, University of Exeter, August, 1998.

40. *On the number of generators of Cohen-Macaulay ideals*, First national meeting on Commutative Algebra and Algebraic Geometry, Kodaikanal, March 23-29, 1998.
41. *Cohen-Macaulay fiber cones*, International Conference on Algebraic Geometry and Differential Geometry, TIFR, Bombay, July 1997.
42. *Mixed multiplicities and fiber cones*, Conference on Combinatorial Commutative Algebra, Essen (Germany), June 1997.
43. *Cohen-Macaulay fiber cones*, International Conference in Algebra and Geometry at Hanoi (Vietnam), August 1996.
44. *Mixed Hilbert coefficients of ideals generated by d -sequences*, Symposium on Algebra, TIFR, Bombay, 1994.
45. *Hilbert functions of bigraded algebras*, Workshop in Commutative Algebra, ICTP (Trieste, Italy), 1992.
46. *Associated graded rings and Rees rings of two dimensional regular local rings*, Symposium on Commutative Algebra and Algebraic Geometry, IIT, Bombay, August, 1990.
47. *Rees algebras of two dimensional Cohen-Macaulay local rings*, Special Session in Commutative Algebra in the 855th Meeting of the American Mathematical Society, Manhattan, Kansas, USA, 1989.
48. *Joint reductions of complete ideals*, Special Session in the 841st Meeting of the American Mathematical Society, Knoxville, Tennessee, USA, 1988.
49. *Rees algebras and mixed multiplicities*, Summer Meeting of the American Mathematical Society, Salt Lake City Utah, USA, 1987.

Seminars and Colloquia

1. *The special orthogonal group*, 5 lectures, Instructional School on algebra, Shivaji University, Kolhapur, 21-22 December, 2015.
2. *Matrix groups*, 6 lectures, Instructional School on Algebra, MNIT, Jaipur, 15-19 December, 2015.
3. *Variations of the Grothendieck-Serre Formula for Hilbert-Samuel functions of ideals and their applications*, University of Missouri, Columbia, MO, 21 October, 2015.
4. *Local Cohomology of Multi-Rees Algebras, Joint Reductions and Complete Ideals*, University of Kansas, Lawrence, KS, 20 October, 2015.
5. *Galois' Solvability Theorem*, 4 lectures, NCM Instructional School in Algebra for Teachers at SRTM College, Nanded, 10-13 December, 2014.
6. *Euclid's Last Proposition*, Inspire Camp at Pravara Rural College of Pharmacy, Nasik, 28 December, 2013.
7. *Local Cohomology Modules*, 6 lectures, IIT Bombay, 2013.
8. *Constructible regular polygons*, Inspire Science Camp at Dr. Radhakrishna Institute of Technology, Jaipur, 21 September 2013.
9. *Constructible regular polygons*, Inspire Science Camp at G. N. Khalsa College, Mumbai, 28 September 2013.
10. *Ruler compass constructions*, JECRC University, Jaipur, 14 March 2013.
11. *Four Problems of Euclidean Geometry*, Inspire Science Camp, Sarvajanik College of Science, Surat, 30 November, 2012.
12. *Zariski-Lipman Theory of complete ideals*, 12 lectures, Vietnam Institute of Advanced Studies in Mathematics, 3-21 September, 2012.
13. *Cyclic and abelian extensions*, 4 lectures, Annual Foundation School III, HRI, Allahabad, 23-31 July, 2012.
14. *Linear Transformations*, 4 lectures, Instructional school for college teachers, SGGS Institute of Engineering and Technology, Nanded, 25-26 May, 2012.
15. *Cohen-Macaulay Rings*, 6 lectures, AIS in commutative algebra, IIT Madras, 13-19 May 2012.
16. *Fundamental Theorem of Algebra*, Institute Colloquium at LNM-IIT Jaipur, 17 April, 2012.
17. *Solving Polynomial Equations*, 3 lectures, Miniworkshop on Algebra and Number Theory, Kumaun University, Almora, 22-24 March 2012.

18. *Cohen-Macaulay rings* , 4 lectures, Workshop on Computational Methods in Commutative Algebra and Algebraic Geometry, NIIT University, Neemrana, 16-28 January, 2012.
19. *Invariants of finite groups*, 6 lectures, Advanced Instructional School on Invariant Theory, Chennai Mathematical Institute, Chennai, 12-30 December, 2011.
20. *Polynomials and Polytopes*, IISER Pune, 31 July 2010,
21. *Pick's Area Theorem and Farey fractions*, Workshop in Mathematics for high school teachers organized by Bombay Association for Science Education, 23 July 2010.
22. *Gorenstein's theorem about plane algebraic curves*, two lectures, Advanced Instructional School on Schemes and Cohomology, Kerala School of Mathematics, Calicut, 16-17 July 2010.
23. *Gröbner bases and polynomial equations*, Ramakrishan Mission Vivekananda University, Belur Math, Kolkata, 2 April, 2010.
24. *Solving polynomial equations*, S. P. College, Pune and Pune University, Jan 9, 2010.
25. *Polynomial equations and volumes of polytopes*, BITS Pilani, 7 March, 2010.
26. *Cohen-Macaulay rings*, four lectures, AIS in Commutative Algebra, IIT Bombay, May 2009.
27. *Chern Number of an ideal*, Colloquium at University of Zurich, April 2009.
28. *Chern number of an ideal*, four lectures, IIT Bombay, Feb-March, 2009.
29. *Mixed multiplicities and mixed volumes*, Colloquium at University of Pernambuco, Recife (Brazil), August 2008.
30. *Hilbert-Samuel polynomials*, six lectures, Workshop in Commutative Algebra & Algebraic Geometry IIT Madras, June, 2007
31. *Reforms in the Ph. D. Programme and establishment of a Center for Mathematical Sciences at IISER, Mohali, for a rapid transformation of Ph. D. Programmes in universities in Punjab*, Workshop on Education and Research in Punjab, IISER, Mohali, Feb 2008.
32. *Hilbert-Samuel coefficients*, seven lectures, University of Essen, Essen (Germany), September-November, 2006.
33. *Cohen-Macaulay Multi-Rees Algebras*, Colloquium, Department of Algebra and Geometry University of Barcelona (Spain), November 10, 2006.
34. *Finite fields*, Six lectures in a *UGC refresher course*, Mumbai university, March 2006.
35. *Galois theory*, Eight lectures in *Second Annual Foundation School-Part I*, Bhakaracharya Pratishthana and University of Pune, 10-20 Dec, 2005.
36. *Matrix groups*, Four lectures in *XI Workshop in Mathematics*, Indian Institute of Technology Bombay, 10-15 November, 2005.
37. *Hilbert coefficients and depth of form rings*, Four lectures in the *Commutative Algebra Seminar*, IIT Bombay, September, 2005.
38. *Cohen-Macaulay rings*, Six lectures in the *Advanced Instructional School in Commutative Algebra and Algebraic Geometry*, Indian Institute of Technology Bombay, 4-30 July, 2005.
39. *Hoskin-Deligne formula and blow-up algebras*, Colloquium at University of Osnabrueck, Germany, 24 June 2005.
40. *Zariski's theory of complete ideals*, Colloquium at University of Duisberg-Essen, 20 June, 2005.
41. *Complete ideals*, Colloquium at University of Bochum, Germany, 19 June 2005.
42. *Zariski's theory of complete ideals*, Four lectures at University of Duisberg-Essen, 14-21 June, 2005.
43. *Basic commutative algebra*, Six lectures on Noetherian rings and modules in *2004 Annual Foundation School-II*, Harish-Chandra Research Institute, Allahabad, 3-15 December, 2004.
44. *Hilbert functions and magic squares*, Indian Institute of Technology Delhi, 22 November, 2004.
45. *Topics in Galois theory*, Six lectures in *2004 Annual Foundation School-I* Indian Institute of Technology Bombay, 17-22 May, 2004.
46. *Euclid's last proposition, Fun with Mathematics IV*, organized by the Bombay Association of Science Education and the National Academy of Sciences, Tata Institute of Fundamental Research, Mumbai, September 28, 2003.

47. *Regular Polyhedra and Euclid's Last Proposition*, *Mathematics Workshop* at Homi Bhabha Centre for Science Education, TIFR, Mumbai July 15, 2003.
48. *Stanley's solution of the Anand-Gupta-Dumir Conjecture* 3 lectures in *Workshop in Combinatorics and Commutative Algebra*, University of Pune, July 7-12, 2003.
49. *Groebner Bases and Solving Polynomial Equations*, 4 lectures in *Workshop on "Computational Mathematics"* University of Pune, March 22-25, 2003.
50. *Anand-Gupta Dumir conjecture*, Colloquium at Harish-Chandra Research Institute, Allahabad, February, 2003.
51. *Invariant Rings of Finite Groups*, 4 lectures in *Workshop on Arithmetic and Computational Algebraic Geometry*, Harish-Chandra Research Institute, Allahabad, January 8-11, 2003.
52. *Depth of blow-up algebras and Hilbert coefficients*, 6 lectures, Institute of Mathematics, Hanoi(Vietnam), July 20-Aug 10, 2002.
53. *Hilbert functions and magic squares* , colloquium at Institute of Mathematics, Hanoi (Vietnam), Aug. 5, 2002.
54. *Solving polynomial equations via eigenvalues*, 4 lectures, Indian Institute of Technology, Kanpur, July 8-10, 2002.
55. *Gorenstein invariant subrings*, a series of 6 lectures, Indian Institute of Science, Bangalore, March 21-April 3, 2002.
56. *Invariants of finite subgroups of the general linear group*, colloquium at the Indian Statistical Institute, Bangalore centre, April 2, 2002.
57. *Finite fields*, a series of 4 lectures: *UGC refresher course*, University of Mumbai, February 25-27, 2002.
58. *Spectral resolution of normal operators*, a series of 4 lectures, *UGC refresher course*, University of Indore, October, 2001.
59. *Bernoulli and his numbers* lecture delivered in the Annual Mathematics Festival "Mathminar" in Bhavan's college, Andheri, Mumbai, September 8, 2001.
60. *Face rings of shellable simplicial complexes*, a series of 5 lectures : *NBHM Nurture and Contact Programme*, TIFR, Bombay, May 21-June 15, 2001.
61. *Spectral Theorem for symmetric matrices*, a series of 8 lectures : *7th Workshop in Mathematics*, Department of Mathematics, IIT, Bombay, Dec 25-30, 2000.
62. *Hilbert-Samuel polynomials*, a series of 6 lectures in the commutative algebra seminar, IIT, Bombay, Autumn semester, 2000.
63. *Cohen-Macaulay rings*, a series of 3 lectures, Winter School on *Cohomological Methods in Commutative Algebra* , organized by IIT, Bombay at the Homi Bhabha Center for Science Education, Mumbai, November 27-December 16, 2000.
64. *Fundamental theorems of commutative algebra*, a series of 13 lectures : *NBHM Nurture Programme*, TIFR, Mumbai, June-July 2000.
65. *Symmetric functions and the fundamental theorem of algebra*, a series of 3 lectures, *UGC refresher course*, Mumbai University, February 2000.
66. *Invariants of finite groups*, a series of 10 lectures in Winter school on *Algorithms in invariant theory and algebraic geometry*, University of Pune, Dec 8 1999-Jan 1, 2000
67. *Factorization*, a series of 12 lectures in *Mathematics training and Talent Search Programme* of the NBHM, Regional Institute of Education, Mysore, June 24-July 19, 1999.
68. *Galois theory of equations*, a series of 15 lectures in *Nurture Programme* of the NBHM Tata Institute of Fundamental Research, Mumbai, 15 June-10 July,1999.
69. *Solutions of polynomial equations*, a series of three lectures in the *Fourth Workshop in Mathematics*, IIT, Bombay, December, 1998.
70. *Hilbert series of fiber cones*, colloquium delivered in Mathematics Department , IIT, Bombay, November, 1997.
71. *Mixed multiplicities of ideals*, a series of four lectures at the Institute of Mathematics, Cologne (Germany), June, 1997.

72. *Pick's area theorem*, a lecture at the Homi Bhabha Center of Science Education, Indian Mathematics Olympiad Training Camp, May, 1997.
73. *Applications of Gröbner bases to ideal theory*, a series of five lectures in the *UGC Refresher Course* in Computational Algebraic Geometry, Bombay University, 1996.
74. *Complete intersections in regular local rings*, a series of 5 lectures in the NBHM sponsored *Instructional Conference in Complete Intersections* held at the Indian Institute of Science Bangalore, June, 1996.
75. *Hilbert functions*, a series of 5 lectures at Bombay University, January, 1995.
76. *Face rings of simplicial complexes*, a series of 5 lectures in the NBHM sponsored *Instructional Conference on Combinatorial Topology and Algebra* held at IIT, Bombay, December, 1995.
77. *Macaulay's theorem on Hilbert functions*, a series of 4 lectures in the *UGC Refresher Course* at Pondicherry University, 1994.
78. *Gorenstein invariant subrings of polynomial rings*, a series of 3 lectures at the Tata Institute of Fundamental Research, Bombay, 1993.
79. *Four problems of classical geometry*, a series of 12 lectures in the MTTS Programme, IIT, Bombay, June 1993.
80. *Applications of Galois Theory*, a series of 7 lectures in the *UGC Refresher Course* at Bombay University, 1991.

Organisation of workshops and conferences

1. *Instructional School on Algebra*, MNIT, Jaipur, 7-19 December, 2015.
2. *28th Annual Conference of the Ramanujan Mathematical Society*, Reva Institute of Technology, Bangalore, 27-30 June 2013.
3. *Miniworkshop in algebra and number theory*, Kumaun University, Almora, 22-24 March, 2012.
4. *Workshop on computational commutative algebra and algebraic geometry*, NIIT university, Neemrana (Rajasthan), 16-28 January, 2012.
5. *Commutative Algebra and Algebraic Geometry-2012*, University of Pondicherry, sponsored by NBHM, 5-9 March 2012.
6. *Commutative Algebra and Algebraic Geometry-2010*, IISc Bangalore, conference in honour of B. Singh, U. Storch and R. V. Gurjar, 6-10 Dec. 2010.
7. *Advanced Instructional School in group theory*, IIT Bombay, sponsored by NBHM, 10-29 May 2010.
8. *Advanced Instructional School in commutative algebra*, IIT Bombay, sponsored by NBHM, 14 May-3 June 2009.
9. *CIMPA School and International Conference in Commutative Algebra*, IIT Bombay, sponsored by CIMPA, NBHM, IMU, ICTP and IIT Bombay, Jan 2007.
10. *ATM School for lecturers in algebra and linear algebra*, IIT Bombay, sponsored by the National Board for Higher Mathematics, 5 June-1 July, 2006.
11. *Advanced Instructional School in Commutative Algebra and Algebraic Geometry*, Sponsored by the National Board for Higher Mathematics, IIT Bombay, 4-30 July, 2005.
12. *School on Commutative algebra and interactions with algebraic geometry and combinatorics*, ICTP, Trieste, Italy, 24 May-June 11, 2004.
13. *Special Session on commutative algebra and algebraic geometry* Joint India-AMS Mathematics Meeting, Bangalore, December 17-20, 2003.
14. *International conference on commutative algebra and combinatorics*, Harish-Chandra Research Institute, Allahabad, December 8-13, 2003.
15. *Workshop on Combinatorics and Commutative Algebra*, University of Pune, supported by UGC, July 7-12, 2003.
16. *5th National Meeting on Commutative Algebra and Algebraic Geometry*, Indian Institute of Technology Bombay, Mumbai, April 2003.

17. *Workshop on Computational Algebraic Geometry* directed by W. Decker, Harish-Chandra Research Institute, Allahabad, January 2003.
18. *International Conference on Algebra and Geometry*, University of Hyderabad, Dec 7-14, 2001.
19. *Fourth Nurture and Contact Programme for 1997 INMO Winners*, supported by the NBHM, TIFR, Bombay, May 21-June 16, 2001.
20. *Winter School and International Conference on Cohomological Methods in Commutative Algebra*, Supported by NBHM and IMU, HBCSE, Mumbai, November 27- December 16, 2000.
21. *Commutative Algebra and Algebraic Geometry : The Third National Meeting*, Indian Institute of Science, Bangalore, October 16-October 21, 2000.
22. *Third Nurture and Contact Programme in Mathematics for Winners of INMO 1997*, supported by the NBHM TIFR, Mumbai, June 2000.
23. *Algorithms in invariant Theory and algebraic geometry*, Winter School sponsored by NBHM held at University of Pune, Dec 9, 1999 - Jan 1, 2000.
24. *Trends in Commutative Algebra*, an international conference sponsored by NBHM held at IIT, Bombay, Jan. 2000.
25. *First National meeting on Commutative Algebra and Algebraic Geometry*, Kodaikanal, March 23-29, 1998.
26. *Complete Intersections*, Instructional conference held at the Indian Institute of Science, Bangalore, sponsored by NBHM, 1995.
27. *Combinatorial Topology and Algebra* Instructional Conference sponsored by NBHM at IIT, Bombay, 1993.

Master's Students guided

Student	Project Title	Year
1. Jaya Iyer	Zariski Topology	1990
2. Aparna Jog	Hilbert Functions	1990
3. Aparna Mudgal	Hilbert's Seventeenth Problem	1991
4. Rahul Athale	Gröbner Bases and Polynomial Ideals	1996
5. Kartik Prasanna	Rational Points on Elliptic Curves	1997
6. Shalini Pharaswal	Topics in Linear Algebra and Geometry	1999
7. H. Ananthnarayan	Asymptotic Prime Divisors and their Applications	2001
8. Archana Morje	Solving systems of polynomial equations	2004
9. Pooja Singla	Computations and applications of Hilbert functions	2004
10. Arindam Mondal	Integral closures of rings and ideals	2005
11. Humanyu Kabir	Groebner Bases and their applications	2006
12. Sridevi Masuti	Topics in Galois Theory	2007
13. Kriti Goel	Rings of invariants of finite groups	2015

Honorary Work

1. Member of the Committee for Academic Review of Mathematics Department of IISER, Mohali, 2015.
2. Member of the core committee of Science and Engineering Research Board for Mathematical sciences, Govt. of India. 2015-2017.
3. Member of the UGC Expert Committee for Centre for Advanced Study in Mathematics at Pune University, 2015-2019.
4. Member, INSA Committee for Selection of Fellows, 2015-2017.
5. Member, Editorial Board of Lecture Notes Series of Ramanujan Mathematical Society, 2008-2013.
6. Secretary, Ramanujan Mathematical Society, 2013.
7. Member, Academic Council of Chennai Mathematical Institute, 2011-

8. Member, Board of Studies of Central University of Rajasthan, Kishangarh, Rajasthan, 2012-
9. Member, Board of Studies of Kumaun University, Almora (Uttarakhand), 2011-
10. Secretary, Apex Committee of the National Centre for Mathematics, a joint centre of IIT Bombay and TIFR, 2010-
11. Member, MHRD Committee for Ramanujan-125 Celebrations, 2011-2012.
12. INSA Steering Committee for Indian participation in the International Congress for Mathematics Education-2012.
13. Convener, *NBHM Committee*, Advanced Training in Mathematics Schools, 2010-2013.
14. Member, *Scientific Committee*, CIMPA School and International Conference, IIT Bombay in 2008.
15. Member, *Advisory Board*, Centre for Computational Mathematics, Ministry of Telecommunications, Govt. of India, 2007.
16. Member, *Board of Trustees*, Bhaskaracharya Pratishthana, Pune. 2006-2010.
17. Member, *NBHM Research Awards Committee*, 2007.
18. Member, *China-India-Vietnam Network in Commutative Algebra*, sponsored by ICTP, Trieste (Italy), 2002-2005.
19. Member, *Post Graduate Programme Committee* of IIT Bombay, 2003-2005.
20. Member, *Ph. D. Rules and Regulations Committee*, 2004.
21. Member, *Committee for the Nurture Programme in Mathematics* National Board for Higher Mathematics.
22. Secretary, Advanced Training in Mathematics Schools, Sponsored by the National Board for Higher Mathematics.
23. Editor, *Resonance*, A journal of science education, Indian Academy of Sciences, Bangalore 2003-2005.
24. Reviewer for *Mathematical Reviews*.
25. Refereed papers for Mathematical proceedings of Indian National Science Academy, Transactions of American Mathematical Society, Proceedings of the American Mathematical Society, Journal of Algebra, Journal of Pure and Applied Algebra, Communications of Algebra and Indian Journal of Pure and Applied Mathematics and proceedings of several conferences.
26. Member, Managing Committee, *Bombay Mathematical Colloquium*.
27. Organizer of *Popular Lecture Series in Mathematics* 1997-2003.