

# Curriculum Vitae

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## Education

- Ph.D (1976), The State University of New York at Stony Brook
- M.A. (1974), The State University of New York at Stony Brook

## Positions

- Research Fellow, Beijing Institute of Mathematical Sciences and Applications (2022-)
- Professor, Department of Mathematical Sciences, Tsinghua University (2011-2022)
- Emeritus Distinguished Professor, University of Illinois at Chicago (2011-)
- Honorary Professor, Department of Mathematics, the University of Hong Kong (2018-)
- Distinguished Professor, University of Illinois at Chicago (2005-2011)
- Professor, Department of Mathematics, Statistics and Computer Science, University of Illinois at Chicago (1984-2005)
- Professor, Department of Electrical and Computer Engineering, University of Illinois at Chicago (2002-2011)
- Director, Laboratory of Control and Information (1993-2011)
- Director, Institute of Mathematics, East China Normal University (2002-2011)
- Zi-Jiang Professor, East China Normal University (2002-2011)
- Visiting Professor, Harvard University (Winter 1999)
- Visiting Professor, University of Pisa, Italy (Spring 1990)
- Visiting Professor, Johns Hopkins University (1989 - 90)
- University Scholar, University of Illinois at Chicago (1987 -90)
- Visiting Professor, Institute Mittag-Leffler, Sweden (January-March, 1987)
- Visiting Professor, Yale University (1984-85)
- Visiting Associate Professor, University of Southern California (1983-84)
- Member, The Institute for Advanced Study (1981-82)
- Visiting Research Mathematician, Princeton University (Spring 1981)
- Associate Professor, University of Illinois at Chicago (1980-84)

- Benjamin Pierce Assistant Professor, Harvard University (1977-80)
- Member, The Institute for Advanced Study (1976-77)

### **Prizes and Awards**

- Asia-Pacific Artificial Intelligence Association (AAIA) Fellow, 2023
- Beijing Excellent Teachers, 2022
- the 8th International Congress of Chinese Mathematicians, the Chern Prize of Lifetime Achievement in Mathematics, 2019
- American Mathematical Society Fellow, 2013
- Distinguished University Professor, University of Illinois at Chicago, 2005
- IEEE Fellow, 2003
- John Simon Guggenheim Fellowship, 2000
- University Scholar, University of Illinois at Chicago (1987-90)
- Alfred P. Sloan Research Fellow (1980-82)

### **Membership**

- Fellow of the Institute of Electrical and Electronic Engineers
- Member of Society for Industrial and Applied Mathematics
- Fellow of American Mathematical Society

### **Grants**

- National Natural Science Foundation of China(2013-2016, 2015-2018, 2016-2020, 2018-2020, 2019-2022, 2022-2025)
- Army Research Office of USA (1989-2005)
- National Science Foundation of USA (1976-88, 1989-2003, 2005-2011, 2011-2015)

- National Science Foundation Special Year Grant of USA (1987-88)
- National Security Agency of USA (2002-2005, 2005-2007)
- Research Board, University of Illinois at Chicago (1987, 1984, 1983, 1981)
- The Clark and the Topier Fund, Harvard University (1977-80)

### **Honors**

- Open Invitation to spend 1984-86 as a Research Professor at Sonderforschungsbereich "Theoretische Mathematic", University of Bonn, Germany.
- Invited one-hour address at the AMS Meeting, Worcester, Massachusetts, April 1985.
- Plenary Lecture at the Swedish Mathematical Society Meeting, Linkoping, January 1987.
- Invited to visit one week and give a colloquium lecture at Aarhus University, Denmark, February 1987.
- Invitation to spend a month at Fudan University, Shanghai, People's Republic of China to give a series of lectures, November and December 1987.
- Invitation to spend one week at the Institute of Mathematics, Academia Sinica, Beijing, People's Republic of China to give several lectures, December 1987.
- Invitation to spend eight weeks at the University of Pisa, Italy to give a series of lectures, January - February 1990.
- Invitation to spend 9 days at Global Analysis Research Center, Seoul National University, Korea to give a series of lectures, February 1992.
- Invitation to spend one month at Nanjing University, People's Republic of China to give a series of lectures, May 1993.

- Invitation to spend one month at National Taiwan University to give a series of lectures, May 1994.
- C.M. Cha Fellow from Hong Kong Baptist University, Hong Kong, May-July, 1995.
- Invitation to spend two months at Hong Kong Baptist University to give a series of lectures, Hong Kong, May-July, 1997.
- Invitation to spend two months as Visiting Professor at the University of Science and Technology of Hong Kong to give a series of lectures, Hong Kong, China, 1997.
- Invitation to give 5 two-hours Distinguished Lecture Series on Control Theory, Special Year on Control Theory, October 1997, Morningside Institute, Academia Sinica, China.
- Invitation to spend two months as Visiting Professor at the Chinese University of Hong Kong to give a series of lectures, Hong Kong, China, 1998.
- Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Beijing, China, December 1998.
- Zi-Jiang Professor, East China Normal University, China, May-June, 2002-2003.
- Director of Institute of Mathematics, East China Normal University, China (2002-2011).
- Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Hong Kong, China, December, 2004.
- Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Hangzhou, China, December, 2007.
- Invited Distinguished lecture at Centennial Expert's Forum of Lanzhou University, Lanzhou, China, May, 2010.
- Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Beijing, China, December, 2010.
- Invitation to visit the Center for Advanced Studies, Warsaw University of Technology, Poland, May-June, 2011.
- Invitation to visit East China Normal University to give a colloquium talk, Shanghai, China, May, 2011.
- Invitation to visit Nanchang University to give a colloquium talk, Nanchang, China, May, 2011.
- Invited one-hour speaker in the workshop on Complex Analysis and Complex Geometry, Wuhan University, China, June, 2011.
- Invitation to spend two and half months as Visiting Professor at the University of Science and Technology of Hong Kong to give a lecture and conduct research project, Hong Kong, China, June-August, 2011.
- Invitation to visit Australia National University to give a colloquium talk, Australia, Oct. 2011.
- Colloquium talk at the Institute of Mathematics, Chinese Academy of Science, Beijing, China, Mar. 2012.
- Colloquium talk at the Institute of Mathematics, Chinese Academy of Science, Taipei. Mar. 2012.
- Invited speaker, Mini-workshop of Algebra, Taida Institute of Mathematical Science, National Taiwan University, Taipei, Mar. 2012.
- Invited speaker, East Asia Mini-Wokshop on CR Geometry, Institute of Mathematics, Chinese Academy of Science, Taipei, Mar. 2012.
- Invitation to visit Harbin Engineering University to give a colloquium talk, Harbin, China, August 2012.
- Invited one-hour speaker at the 2013 Chinese-Norwegian Mathematics Conference, Trondheim, Norway, June, 2013
- Invited one-hour speaker at the 2013 Abel Symposium sponsored by the Norwegian Mathematical Society, Trondheim, Norway, July 2-5, 2013.

- Invited one-hour plenary speaker at International Congress of Chinese Mathematicians, Taipei, July, 2013.
- Plenary talk at 2013 Annual Conference of Chinese Several Complex Variables, Xuzhou, China, August, 2013.
- Plenary Lecture at The Hong Kong Mathematical Society Annual General Meeting, Hong Kong, China, June, 2014.
- Invitation to visit East China Normal University to give a colloquium talk, Shanghai, China, April, 2014.
- Invitation to visit Sun Yat-Shen University to give a colloquium talk, Guangzhou, China, April, 2014.
- One of Organizers, workshop at Third Conference of Tsinghua Sanya International Mathematics Forum, Sanya, Hainan, China, May, 2014.
- Invitation to visit Beihang University to give a colloquium talk, Beijing, China, May, 2014.
- Invitation to visit the Chinese University of Hong Kong to give a colloquium talk, Hong Kong, China, June, 2014.
- Invited colloquium Talk at Renmin University of China, Beijing, China, March 20th, 2015.
- Invitation to visit the Chinese University of Hong Kong to give a colloquium talk, Hong Kong, China, April 29th -May 5th, 2015.
- Invitation to visit the National Taiwan University to give a colloquium talk, Taipei, China, June 24th -July 1st, 2015.
- Invitation to visit the Center for Advanced Studies, Warsaw University of Technology, Poland, July, 2016.
- Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Beijing, China, June, 2019.
- Invited one-hour speaker at Moduli Spaces in Mathematics Workshop & Conference, Beijing, China, April, 2023.
- Plenary talk at the first International Forum in Basic Science, Beijing, China, July, 2023.
- Invited one-hour speaker at the Satellite Conference on Fundamental Science, Shanghai, China, July, 2023.
- Invited one-hour speaker at The First Symposium of Geometry and Statistics, Beijing, China, July, 2023.

#### Ph.D Student Supervision

1. Yung Yu (1988)
2. Craig Seeley (1988)
3. Yi-Jing Xu(1990)
4. Wen-Lin Chiou (1991)
5. Chi-Wah Leung (1993)
6. Tan Jiang (1993)
7. Li-Xing Jia (1994)
8. Jie Chen (1994)
9. Amid Rasoulia (1995)
10. Hon-Wing Cheng (1996)
11. Qing-Long Zhang (1996)
12. Guo-Qing Hu (1997)
13. Zhi-Gang Liang (1998)
14. Ke-Pao Lin (1999)
15. Xi Wu (2000)
16. Zhe Li (2002)
17. Xue-Jun Wang (2002)
18. Shao-Bo Wang (2002)
19. Junfeng Ding (2005)

20. Changchuan Yin (2005)
21. Libin Liu (2005)
22. Dongchul Yoo (2005)
23. Jiuhong Tang (2005)
24. Dongmin Cai (2006)
25. Ling Zhou (2007)
26. Peng He (2007)
27. Chaoxiao Lu (2008)
28. Rong Du (2009)
29. Weitian Zang (2009)
30. Qian Liang (2010)
31. Bo Zhao (2010)
32. Chenglong Yu (2010)
33. Mo Deng (2011)
34. Fei Ye (2011)
35. Eb Armah (2011)
36. Yang Jiao (2012)
37. Huaiqing Zuo (2012)
38. Troy Antonio Hernandez (co-directed with Jie Yang) (2013)
39. Xue Luo (2013)
40. Hsin-Hsiung Bill Huang (co-directed with Jie Yang) (2014)
41. Hui Zheng (2015)
42. Tung Hoang (2017)
43. Kun Tian (2017)
44. Yongkun Li (2017)
45. Ji Shi (2018)
46. Xiuqiong Chen (2019)
47. Naveed Hussain (2019)
48. Rui Dong (2020)
49. Xin Zhao (2020)
50. Lily He (2020)
51. Wenhui Dong (2020)
52. Bingyi Chen (2021)
53. Shaojun Pei (2022)
54. Xiaopei Jiao (2022)
55. Guorui Ma (2023)
56. Nan Sun (2024)
57. Jiayi Kang (2024)
58. Yangtianze Tao (2024)
59. Zhiwen Liu (2024)

#### High School Student Supervision

- Letian Zhang, Intel Science Competition Final Forty list (2006), published two papers in SCI journals. One of them published on the top-class journal–Math. Res. Lett..
- Linda Zhao, Intel Science Competition Semi-Final list (2008), published two papers in SCI journal.
- Irene Chen, Intel Science Competition Semi-Final list, and Gold Medalist of Yau Worldwide High School Mathematics Research Project Competition (2009), published one paper in SCI journal.
- Victor Duan, Intel Science Competition Semi-Final list (2010), published one paper in Journal of Theoretical Biology.
- Sarvasva Raghuvanshi, Intel Science Competition Semi-Final list, and Silver Medalist of Yau Worldwide High School Mathematics Research Project Competition (2015), published one paper in Asian Journal of Mathematics.

**Selected Professional Activities**

- Managing Editor and Founder, Journal of Algebraic Geometry (January 1991 -).
- Editors-in-Chief and Founder, Communications in Information and Systems (January 2001 -).
- Editor, Pure and Applied Mathematics Quarterly (June 2018 -).
- Editor, Mathematics (November 2020 - May 2022).
- Guest Editor, Special issues of Science in China, Series A: Mathematics, 2006, 2010.
- Executive Committee, International Congress of Chinese Mathematicians, Beijing, China Dec. 2010.
- Program Committee, International Conference on Complex Analysis and Related topics, Beijing, China, August 2009.
- Guest Editor, Special issues of Asian Journal of Math., 2003, 2007, 2011, 2017.
- Scientific committee, International Congress of Chinese Mathematicians, Hangzhou, China, Dec. 2007.
- Coorganizer, AMS special session on Analysis and CR Geometry, De Paul University, Chicago, Oct. 2007.
- Scientific Committee, International Conference on Several Complex Variables, Beijing, China, July 2006.
- Organizer, International Conference on Several Complex Variables, University of Science and Technology, Hefei, China, June 2005.
- Scientific Committee Member, International Congress of Chinese Mathematicians, Hong Kong, December 2004.
- Organizer, International Conference on Complex Geometry and Related Topics, East China Normal University, Shanghai, China, June 2004.
- Coorganizer, AMS special session "iterated function systems and analysis on fractals", Evanston, Illinois, Oct. 23-24, 2004
- Organizer, NSF US-Hong Kong Conference on Recent Developments in Several Complex Variables, Cauchy Riemann Geometry and Complex Algebraic Geometry, Nov. 2003.
- Chair of the technical session of "Soft Computing II", IEEE International Symposium on Intelligent Control, Houston, TX, Oct. 2003.
- Chair of the technical session of "Robust and Nonlinear Filtering" at American Control Conference, Denver, CO, June 2003.
- International Advisory Committee of the Satellite Conference of ICM 2002 on Control and Optimization, Xi'an, China.
- Executive Committee, International Congress of Chinese Mathematicians, Taipei, Taiwan, December 2001.
- Organizing Committee of International Conference on Singularities and Applications, Beijing, July 2001.
- Organizing Committee Member, International Workshop on Complex Analysis and Geometry, Chinese University of Hong Kong, May 2000
- Chair of the technical session of "Nonlinear Control and Stabilization" at the IEEE CDC, Sydney, Australia, December 2000.
- Cochair of the technical session of "Estimation and Filtering" at American Control Conference, Chicago, IL, June 2000.
- Organizer, Minisymposium on CR Geometry, The Chinese University of Hong Kong, May, 1999
- Chair of the Technical Session at the IEEE Conference of Decision and Control, "Nonlinear Filtering II", San Diego, CA 1997, Tampa, FL, 1998

- Scientific Member, International Congress of Chinese Mathematicians, Beijing, December 1998.
  - Organizer, International Workshop on CR Manifolds, The Chinese University of Hong Kong, May 1997
  - General Chairman, IEEE International Conference on Control and Information, The Chinese University of Hong Kong, June 1995
  - Coorganizer, International Conference on Singularities and Complex Geometry, Beijing, China, June 1994
  - Coorganizer, Wavelets and Large-Scale Image Processing, Chicago, Oct. 1994
  - Coorganizer, Wavelets and their applications in PDE, a minisymposium during SIAM Annual Meeting, San Diego, CA, July 25-29, 1994
  - Organizer, Minisymposium on wavelets at the Third SIAM Conference on Linear Algebra in Signals, Systems and Control, University of Washington, Seattle, August 1993
  - Organizer, Wavelets and its application at IEEE Regional Conference on Aerospace Control Systems, Rockwell Science Center, Thousand, CA, May 1993
  - Co-organizer, Emerging Computational Advances in Systems and Control 31st IEEE Conference on Decision and Control, Tucson, Arizona, December 1992
  - Organizer, Midwest Algebraic Geometry Conference at the University of Illinois at Chicago, March 1988
  - Organizer, National Science Foundation Special Year Algebraic Cycles Conference at the University of Illinois at Chicago, March 1988
  - AMS Special Session Chairman on Singularities and Complex Geometry, Worcester, Massachusetts, April 1985
  - AMS Special Session Chairman on Differential Geometry of Submanifolds, Worcester, Massachusetts, April 1985
- List of Publications**
1. Two theorems on higher dimensional singularities, *Math. Ann.*, Vol. 231 (1977), 55 -59.
  2. On almost minimally elliptic singularities, *Bull. Amer. Math. Soc.*, Vol. 83 (1977), 362-364.
  3. The signature of smoothing of higher dimensional singularities, *Bull. Amer. Math. Soc.*, Vol. 83 (1977), 1313-1315.
  4. Normal singularities of surfaces, *Proceedings of Symposia in Pure Mathematics*, Vol. 32 (1978), 195-198.
  5. The signature of Milnor Fibres and duality theorem for strongly pseudoconvex manifolds, *Invent. Math.*, Vol. 46 (1978), 81-97.
  6. Hypersurface weighted dual graphs of normal singularities of surfaces, *Amer. J. Math.*, Vol. 101 (1979), 761-812.
  7. Gorenstein singularities with geometric genus equal to two, *Amer. J. Math.*, Vol. 101 (1979), 813-854.
  8. On strongly elliptic singularities, *Amer. J. Math.*, Vol. 101 (1979), 855-884.
  9. Normal two-dimensional elliptic singularities, *Trans. Amer. Math. Soc.*, Vol. 254 (1979), 117-134.
  10. On maximally elliptic singularities, *Trans. Amer. Math. Soc.*, Vol. 257 (1980), 269-329.
  11. Index theory for the boundaries of complex analytic varieties, *Proc. Nat. Acad. Sci. USA*, Vol. 77 (1980), 1248-1249.
  12. Deformations and equitopological deformations of strongly pseudoconvex manifolds, *Nagoya Math. J.*, Vol. 82 (1981), 113-129.

13. Kohn-Rossi cohomology and its application to the complex Plateau problem I, *Ann. of Math.*, Vol. 113 (1981), 67-110.
14. Sheaf cohomology on 1-convex manifolds, *Recent Developments in Several Complex Variables*, *Ann. of Math. Study*, Vol. 100 (1981), 429-452.
15. Existence of L<sup>2</sup>-integrable holomorphic forms and lower estimates of TIV, *Duke Math. J.*, Vol. 48 (1981), 537-547.
16. Criterion for biholomorphic equivalence of isolated hypersurface singularities (with John Mather), *Proc. Nat. Acad. Sci., USA*, Vol. 78, No. 10 (1981), 5946-5947.
17. Milnor number and classification of isolated singularities of holomorphic maps (with Bruce Bennett), *Lecture Notes in Mathematics* 949, Springer-Verlag (1982), 1-34.
18.  $s^{n-1}$  invariant for isolated  $n$ -dimensional singularities and its application to moduli problem, *Amer. J. Math.*, Vol. 104, No. 4 (1982), 829-841.
19. Classification of isolated hypersurface singularities by their moduli algebras (with John N. Mather), *Invent. Math.*, Vol. 69 (1982), 243-251.
20. Various numerical invariants for isolated singularities, *Amer. J. Math.*, Vol. 104, No. 5 (1982), 1063-1100.
21. On irregularity and geometric genus of isolated singularities, *Proc. Symp. Pure Math.*, Vol. 40, Part 2 (1983), 653-662.
22. Milnor algebras and equivalent relations among holomorphic functions, *Bull. Amer. Math. Soc.*, Vol. 9 (1983), 235-239.
23. Continuous family of finite-dimensional representations of a solvable Lie algebra arising from singularities, *Proc. Natl. Acad. Sci. USA*, Vol. 80 (1983), 7694-7696.
24. Criteria for right-left equivalence and right equivalence of holomorphic functions with isolated critical points, *Complex Analysis Several Complex Variables*, *Proc. Symp. Pure Math.*, Vol. 41 (1984), 291-297.
25. Riemann-Roch theorem for strongly pseudoconvex manifolds of dimension three (with Paul Yang), *Several Complex Variables*, *Proc. of the 1981 Hangzhou Conf.*, Birkhauser, Boston, (1984), 257-267.
26. An estimate of the gap of the first two eigenvalues in the Schrödinger operator (with I.M. Singer, Bun Wong and Shing-Tung Yau), *Ann. Scuola Norm. Sup., Pisa, Classe di Scienze, Serie IV*, Vol. XII, No. 2 (1985), 319-333.
27. Solvable Lie algebras and generalized Cartan Matrices arising from isolated singularities, *Math. Z.*, Vol. 191 (1986), 489-506.
28. Singularities defined by  $\mathfrak{sl}(2, \mathbb{C})$  invariant polynomials and solvability of Lie algebras arising from isolated singularities, *Amer. J. Math.*, Vol. 108 (1986), 1215-1239.
29. Lie algebras and their representations arising from isolated singularities: Computer method in calculating the Lie algebra and their cohomology (with Max Benson), *Adv. Stud. Pure Math.* 8, *Complex Analytic Singularities* (1986), 3-58.
30. A necessary and sufficient condition for a local commutative algebra to be a moduli algebra: weighted homogeneous case, *Adv. Stud. Pure Math.* 8, *Complex Analytic Singularities* (1986), 687-697.
31. Some surfaces covered by the ball and a problem in finite groups (with G.D. Mostow), *Lecture Notes in Math.*, Springer-Verlag, *Proc. of a Symposium in Honor of T.A. Springer*, Vol. 1271 (1987), 201-228.
32. Holomorphic symmetries (with Blaine Lawson), *Ann. Sci. École Norm. Sup. 4e series, t.*, Vol. 20 (1987), 557-577



33. Classification of Jacobian ideals invariant by  $\mathfrak{sl}(2, \mathbb{C})$  actions, Mem. Amer. Math. Soc., Vol. 72 (1988), 1-180.
34. Topological types and multiplicities of isolated quasi-homogeneous surface singularities, Bull. Amer. Soc., Vol. 19 (1988), 447-454.
35. The inequality  $\mu \geq 12pg - 4$  for weakly elliptic hypersurface singularities (with Yi-Jing Xu), Contemp. Math. 90 (1989), 317-344.
36. Topological types of isolated hypersurface singularities, Contemp. Math., Vol. 101 (1989), 303-321.
37. Classification of topological types of isolated quasi-homogeneous two-dimensional hypersurface singularities (with Yijing Xu), Manuscripta Math., Vol. 64 (1989), 445-469.
38. the Multiplicity of isolated two-dimensional hypersurface singularities: Zariski problem, Amer. J. Math., Vol. 111 (1989), 753-767.
39. Recent results on finite dimensional exact estimation algebra (with L.F.Tam and W.S.Wong), Proceedings of the 28th Conf. on Decision and Control at Tampa, Florida, Dec. (1989), 2574-2575.
40. On a necessary and sufficient condition for finite dimensionality of estimation algebras (with L.F. Tam and W.S. Wong), SIAM J. Control Optim., Vol. 28, No. 1 (1990), 173-185.
41. Variation of complex structures and variation of Lie algebras (with Craig Seeley), Invent. Math., Vol. 99 (1990), 545-565.
42. Equivalences between isolated hypersurface singularities (with Max Benson), Math. Ann., Vol. 287 (1990), 107-134.
43. An obstruction for smoothing of Gorenstein surface singularities (with A. Libgober), Comment. Math. Helv., Vol. 65 (1990), 413-433.
44. Recent results on nonlinear filtering: New class of finite dimensional filters, Proceedings of the 29th Conference on Decision and Control at Honolulu, Hawaii, Dec. (1990), 231-233.
45. A remark on moduli of complex hypersurface, Amer. J. Math., Vol. 113 (1990), 287-292.
46. Structure and classification theorems of finite-dimensional exact estimation algebras (with R.T. Dong, L.F. Tam and W.S. Wong), SIAM J. Control Optim., Vol. 29, No. 4 (1991), 866-877.
47. Obstructions to embedding of real compact  $(2n-1)$ -dimensional CR-manifold in  $C^{n+1}$  (with H.S. Luk), Proceedings of Symposia in Pure Mathematics, Vol. 52 (1991), Part 3, 261-276.
48. Regularity for the Harvey-Lawson solutions to the complex Plateau problem, J. Differential Geom., Vol. 34 (1991), 425-429.
49. Solvability of Lie algebras arising from isolated singularities and nonisolatedness of singularities defined by  $\mathfrak{sl}(2, \mathbb{C})$  invariant polynomials, Amer. J. Math., Vol. 113 (1991), 773-778.
50. Algebraic methods in the study of simple-elliptic singularities, (with Craig Seeley), Lecture Notes in Mathematics, Vol. 1479 (1991), 216-237.
51. Recent results on classification of finite dimensional estimation algebras: Dimension of state space  $\leq 2$  (with Wen-Lin Chiou), Proceedings of the 30th Conf. on Decision and Control, Brighton, England, Dec. 11-13 (1991), 2758-2760.
52. Topological types of seven classes of isolated singularities with  $C^*$ -action (with Yi-Jing Xu), Rocky Mountain J. Math., Vol. 22, (1992) 1147-1215.
53. Classification of gradient space as  $\mathfrak{sl}(2, \mathbb{C})$ -module I (with J. Sampson and Yung Yu), Amer. J. Math., Vol. 114 (1992), 1147-1161.

54. A Sharp estimate of the number of integral points in a tetrahedron (with Yi-Jing Xu), *Journal fur die reine und angewandte Mathematik*, Vol. 423 (1992), 199-219.
55. Recent result on classification of finite dimensional maximal rank estimation algebras with state space dimension 3 (with Chi-Wah Leung), *Proceedings of the 31st Conference on Decision and Control*, Tucson, Arizona, Dec. (1992), 2247-2250.
56. Explicit fundamental solution to Kolmogorov equation (with S.T.Yau), *Proceedings of the 31st Conference on Decision and Control*, Tucson, Arizona, Dec. (1992), 1508-1511.
57. Classification of finite dimensional filters from Lie algebraic point of view, *Transaction of the Ninth Army Conference on Applied Mathematics and Computing*, (1992), 459-466.
58. Complex Hypersurface Singularities with Application in Complex Geometry, Algebraic Geometry and Lie Algebra, *Lecture Notes Series Number 5*, 1992, Research Institute of Mathematics, Global Analysis Research Center, Seoul National University, Seoul Korea.
59. Durfee conjecture and coordinate free characterization of homogeneous singularities (with Yi-Jing Xu), *Journal of Differential Geometry*, Vol. 37 (1993), 375-396.
60. Gorenstein quotient singularities in dimension three (with Yung Yu), *Mem. Amer. Math. Soc.*, Vol. 105, No. 105 (1993), 1-81.
61. Topological and differentiable structures of the complement of an arrangement of hyperplanes (with Tan Jiang), *Proceedings of Symposia in Pure Mathematics*, Vol.54 (1993), part 2, 337-357.
62. Topological invariance of intersection lattices of arrangements in  $CP^2$  (with Tan Jiang), *Bulletin A.M.S.*, Vol.39, No.1 (1993), 88-93.
63. Cohomology and Splitting Criterion for holomorphic vector bundles on  $CP^n$  (with Hing Sun Luk), *Math. Nachr.*, Vol. 161 (1993), 223-238.
64. Finite dimensional estimation algebras of maximal rank with dimension of state space equal to 3 (with Jie Chen and Chi-Wah Leung), *Tenth Army Conference on Applied Mathematics and Computing*, (1993), 337-344.
65. Finite dimensional estimation algebras of maximal rank with dimension of state space equal to 4 (with Jie Chen and Chi-Wah Leung), *European Control Conference*, Groningen, The Netherlands, June 28-July 1, (1993), 2126-2130.
66. Some remarks on wavelet transforms (with Tomasz Bielecki, Jie Chen, E. Bing Lin), *IEEE Proceeding of the first Regional Conference on Aerospace Control Systems*, May 25-27, (1993), 148-150.
67. Explicit construction of finite dimensional nonlinear filters with state space dimension 2 (with Wen-Lin Chiou), *Proceedings of the 32nd Conference on Decision and Control*, San Antonio, Texas, Dec. (1993), 710-713.
68. The classification of low dimensional estimation algebras (with Jie chen and Chi-wah Leung), *Proceedings of 32nd Conference on Decision and Control*, San Antonio, Texas, Dec. (1993), 732-734.
69. Wavelet and Wavelet Stieltjes transforms (with T. Bielecki, J. Chen and E. Lin), *Proceedings of the 32nd Conference on Decision and Control*, San Antonio, Texas, Dec. (1993), 3062-3063.
70. Some PDE problem: from estimation algebras (with Rui-Tao Dong, W. S. Wong), *Proceedings on Aerospace control systems*, The first IEEE Regional conference, (1993), May 25-27, 143-147.
71. Finite dimensional filters with nonlinear drift I: A class of filters including both Kalman-Bucy filters and Benes filters, *J. of Math. Systems*,

- Estimation and Control, Vol. 4, No.2 (1994), 181-203.
72. Finite-dimensional filters with nonlinear drift I-I: Brockett's problem on classification of finite-dimensional estimation algebras (with Wen-Lin Chiou), SIAM J. Control and Optimization, Vol. 32, No. 1 (1994), 297-310.
  73. Diffeomorphic types of the complements of arrangements of hyperplanes (with Tan Jiang), Composito Mathematica, Vol. 92, No. 2 (1994), 133-155.
  74. Explicit formal solution to generalized Kolmogorov equation (with Shing Tung Yau), Eleventh Army Conference on Applied Mathematics and Computing, (1994), 373-386
  75. Algebraic classification and obstructions of embedding of strongly Pseudoconvex compact 3-dimensional CR manifolds in  $C^3$  (with Hing Sun Luk and Yung Yu), Math. Nachr., Vol. 170 (1994), 183-200.
  76. Computing the exponential of matrices, (with Hon Wing Cheng) Proceedings of the American Control Conference, Baltimore, Maryland. June, (1994), 3543-3547.
  77. New direct method for Kalman-Bucy filtering system with arbitrary initial condition (with S.T. Yau), Proceedings of the 33rd IEEE conference on Decision and Control, Lake Buena Vista, Florida, Dec. 14-16,(1994), 1221-1225.
  78. Random Wavelet Transformation and its Properties (with Tomasz R.Bielecki and Jie Chen), SPIE Proceedings on Wavelet Applications in Signal and Image Processing II, Andrew Laine and Michael Unser, eds, Vol. 2303, July, (1994), 345-353 .
  79. Nonexistence of Negative Weight Derivation of Moduli Algebras of Weighted Homogeneous Singularities (with Hao Chen and Yi-Jing Xu), Journal of Algebra, Vol. 172 (1995), 243-254.
  80. Applying wavelet to Kolmogorov equation (with Zhigang Liang), Proceeding of International Conference on Control and Information, (1995), 271-276.
  81. A report on explicit formulas for  $\exp(tA)$  (with Hon-wing Cheng), Proceeding of International Conference on Control and Information, (1995), 69-75.
  82. Recent results on classification of 4-dimensional estimation algebras (with Amid Rasoulian), Proceeding of International Conference on Control and Information, (1995), 371-374.
  83. Random wavelet transform, algebraic geometric coding and their applications in compression and de-noising of signals (with Tomasz Bielecki; Man K. Kwong; Li M. Song), Proceeding of International Conference on Control and Information, (1995), 283-289.
  84. Explicit construction of finite dimensional nonlinear filters with state space dimension 3 (with Jie Chen and Chi-Wah Leung) Proceedings of the 34th IEEE Conference on Decision and Control, New Orleans, Louisiana, Dec. 13-15, (1995), 4030-4034.
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