

# 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

- Professor, Department of Mathematical Science, Tsinghua University, (2011-)
- Emeritus Distinguished Professor of University of Illinois at Chicago (2011-)
- Distinguished Professor of 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-)
- 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 (Winter 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)
- Alfred P.Sloan Research Fellow (1980-82)
- Benjamin Pierce Assistant Professor, Harvard University (1977-80)
- Member, The Institute for Advanced Study (1976-77)

**Prizes and Awards**

- American Mathematical Society Fellow 2013
- University Distinguished Professor, University of Illinois at Chicago 2005
- IEEE Fellow 2003
- Guggenheim Fellowship, 2000-2001
- University Scholar, University of Illinois at Chicago (1987-90)
- Alfred P. Sloan Research Fellowship (1980-82)
- Biographical note in American Men And Women of Science
- Biographical note in Who's Who in America
- Biographical note in Who's Who in Science and Engineering
- Biographical note in Who's Who in the Midwest
- Biographical note in Who's Who in American Education
- Biographical note in Who's Who among Asian Americans
- Biographical note in Who's Who in Sciences Higher Education

**Membership**

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

**Grants**

- Army Research Office (1989-2005)
- National Science Foundation (1976-88, 1989-2003, 2005-20011)
- National Science Foundation Special Year Grant (1987-88)

- National Security Agency (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 Mathematik", University of Bonn, Germany
- Invited one-hour address at the AMS Meeting, Worcester, Massachusetts, April 1985
- Invited one-hour address 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, Republic of China to give a series of lectures, May 1994

- C.M. Cha Fellow from Hong Kong Baptist University May-July, 1995
  - Invitation to spend two months at Hong Kong Baptist University to give a series of lectures, 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, 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, 1998.
  - Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Beijing, China, 1998.
  - Zi-Jiang Professor, East China Normal University, May-June, 2002-2003.
  - Director of Institute of Mathematics, East China Normal University, (2002-).
  - Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Hong Kong, December, 2004.
  - Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Hangzhou, December, 2007.
  - Invited Distinguished lecture at Centennial Expert's Forum of Lanzhou University, May, 2010.
  - Invited 45 minutes speaker at International Congress of Chinese Mathematicians, Beijing, December, 2010.
  - Visiting Distinguished Professor, Center for Advanced Study, Warsaw University of Technology, May, 2011.
  - Invited hour speaker in the workshop on Complex Analysis and Complex Geometry, Wuhan University, June, 2011.
  - Invitation to spend two and half months as Visiting Professor at the Hong Kong University of Science and Technology to give a lecture and conduct research project, June-August, 2011.
  - Invitation to visit Australia National University to give a colloquium talk, Oct. 2011.
  - Colloquium talk at the Institute of Mathematics, Chinese Academy of Science, Beijing. 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. Mar. 2012.
  - Invited speaker, East Asia Mini-Wokshop on CR Geometry, Institute of Mathematics, Chinese Academy of Science, Taipei. Mar. 2012.
  - Invited address at the 2013 Abel Symposium sponsored by the Norwegian Mathematical Society, Trondheim, Norway, July 2-5, 2013.
  - Plenary talk at International Congress of Chinese Mathematicians, Taipei, July, 2013.
  - Plenary talk at 2013 Annual Conference of Chinese Several Complex Variables, XuZhou, August, 2013
  - Plenary Lecture at The Hong Kong Mathematical Society Annual General Meeting, Hong Kong, June, 2014
- 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 Rasoulian (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 iu (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-direct with Jie Yang) (2013)
  39. Xue Luo (2013)
- Selected Professional Activities**
- Managing Editor and Founder, Journal of Algebraic Geometry (1991-).
  - Editors-in-Chief and Founder, Communications in Information and Systems (2000-).
  - 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.
  - 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, Xian, 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
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), 113-192.
  13. Kohn-Rossi cohomology and its application to the complex Plateau problem I, Ann. of Math., Vol. 113 (1981), 67-110.

### 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 Fibers and duality theorems 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.
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 T1V, 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 (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 problems, Amer. J. Math., Vol. 104 (1982), 829-841.
19. Classification of isolated hypersurface singularities by their moduli algebras (with John Mather), Invent. Math., Vol. 69 (1982), 243-251.
20. Various numerical invariants for isolated singularities, Amer. J. Math., Vol. 104 (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. Nat. 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 Schrodinger 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 Matrix arising from isolated singularities, Math. Z., Vol. 191 (1986), 489-506.
28. Singularities defined by  $sl(2, \mathbb{C})$  invariant polynomials and solvability of Lie algebras arising from isolated singularities, Amer. J. Math., Vol. 108 (1986), 1215-1240.
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 symmetry (with Blaine Lawson), Ann. Sci. École Norm. Sup. 4e series, t., Vol. 20 (1987), 557-577
33. Classification of Jacobian ideals invariant by  $sl(2, \mathbb{C})$  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 Yi-Jing Xu), Manuscripta Math., Vol. 64 (1989), 445-469.
38. 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 (1990), 173-185.
41. Variations of complex structures and variation of Lie algebras (with Craig Seeley), Invent. Math., Vol. 99 (1990), 545-565.
42. Equivalence 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 Harvey-Lawson's solution to complex Plateau problem, *J. Differential Geom.*, Vol. 34 (1991) 425-429.
49. Solvability of the Lie algebras arising from singularities and non-isolatedness of the singularities defined by the invariant polynomials of  $sl(2,C)$ , *Amer. J. Math.*, Vol. 113 (1991), 773-778.
50. Algebraic methods in the study of simple-elliptic singularities, (with Craig Seeley), *US-USSR Algebraic Geometry Symposium*, Springer-Verlag, *Lecture Notes in Mathematics* 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  $sl(2,C)$ -module I (with J. Sampson and Yung Yu), *Amer. J. Math.*, Vol. 114 (1992), 1147-1161.
54. Sharp estimate of number of integral points in 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 (1993), 1-88.
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. Nachrichten, 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 drifts I: A class of filters containing both Kalman-Bucy filters and Benes filters, J. of Math. Systems, Estimation and Control., Vol. 4 (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 type of the complement of arrangement of hyperplanes (with Tan Jiang), Composito Math., Vol. 92 (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 compact 3 dimensional CR manifolds in  $C^{n+1}$  (with Hing Sun Luk and Yung Yu), Math. Nachrichten, 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.
85. Construction of new finite dimensional nonlinear filters (with Amid Rasoulian), Proceedings of the 34th IEEE Conference on Decision and Control, New Orleans, Louisiana, Dec. 13-15, (1995), 4002-4005.
86. Invariants of Strongly Pseudoconvex CR manifolds (with Hing-Sun Luk), Five Decades as a Mathematician and Educator, On the 80th Birthday of Professor Yung-Chow Wong, World Scientific, (1995), 279-305.
87. Invariant Kohn-Rossi cohomology and obstruction to embedding of compact real  $(2n-1)$ -dimensional CR manifolds in  $C^N$  (with H.-S. Luk), Journal of the Mathematical Society of Japan, Vol. 48, (1996), 61-68.
88. Finite-dimensional filters with nonlinear drift IV: classification of finite-dimensional estimation algebras of maximal rank with state-space dimension 3 (with Jie Chen, Chi-Wah Leung), SIAM J. Control and Optimization, Vol. 34, No. 1 (1996), 179-198.
89. Direct method without the Riccati equation for a linear filtering system with arbitrary initial conditions (with Guo-Qing Hu), 13th World Congress IFAC, San Francisco, June 30-July 5, Vol. H (1996), 469-474.
90. Microlocal characterization of quasihomogeneous singularities (with Yijing Xu), Amer. J. Math, Vol. 118 (1996), 387-399.
91. Iconic indexing and maintenance of spatial relationships in image databases (with Qing-Long Zhang and Shi-Kuo Chang), Conference on Multimedia Storage and Archiving Systems, SPIE's Photonics East 96 Symposium, Boston, MA, Nov. 18-22, 1996.
92. Explicit solution of a Kolmogorov equation (with S.T. Yau), Applied Mathematics and Optimization, Vol. 34 (1996), 231-266.
93. A unified approach to indexing images in image databases (with Qing-Long Zhang and Shi-Kuo Chang), Proceedings of First International Workshop on Image Databases and Multi-Media Search, Amsterdam, The Netherland, August 22-23, 1996, 99-106.
94. A sharp estimate of the number of integral points in a 4-dimensional tetrahedron (with Yi-Jing Xu), Journal fur die reine und ange wandte Mathematik, Vol. 473 (1996), 1-23.
95. The Structure of  $\Omega$ -matrix in nonlinear filters (with Amid Rasoulian), Proceedings of the 35th Conference on Decision and Control, Kobe, Japan (1996), 1083-1087.
96. Parallel ODE-solvers for Kalman-Bucy Filter with Arbitrary Initial Condition (with Hon-Wing Cheng), Proceedings of the 35th Conference on Decision and Control, Kobe, Japan (1996), 4138-4145.

97. New direct method for Yau filtering system with arbitrary initial conditions (with Guo-Qing Hu), Proceedings of the 35th Conference on Decision and Control, Kobe, Japan (1996), 2539-2544.
98. A unified approach to iconic indexing, retrieval and maintenance of spatial relationships in image databases (with Qing-Long Zhang and Shi-Kuo Chang), Journal of Visual Communication and Image Representation, Vol. 7, No. 4 (Special Issue), Dec. (1996), 307-324.
99. Finite-dimensional filters with nonlinear drift, VI: Linear structure of  $\Omega$  (with Jie Chen), Math. Control Signals Systems, Vol. 9(1996), 370-385.
100. Complete Algebraic CR Invariants of codimension 3 strongly pseudoconvex CR manifolds (with Hing Sun Luk), Studies in Advanced Mathematics, Singularities and Complex Geometry, AMS/IP, Vol. 5 (1997), 175-182.
101. Complement of arrangement of hyperplanes (with Tan Jiang), Studies in Advanced Mathematics, Singularities and Complex Geometry, AMS/IP, Vol. 5 (1997), 93-104.
102. Finite-dimensional filters with nonlinear drift I-II: Duncan-Mortensen-Zakai equation with arbitrary initial condition for the linear filtering system and the Benes filtering system (with Shing-Tung Yau), IEEE Transactions on Aerospace and Electronic Systems, Vol. 33, No. 4, Oct. (1997), 1277-1294.
103. More explicit formulas for the matrix exponential (with Hon-Wing Cheng), Linear Algebra and Its Applications, Vol. 262 (1997), 131-163.
104. Finite-dimensional filters with nonlinear drift V: Solution to Kolmogorov equation arising from linear filtering with non-Gaussian initial condition (with Zhigang Liang and Shing-Tung Yau), IEEE Transactions on Aerospace and Electronic Systems, Vol. 33, No. 4, Oct. (1997), 1295-1308.
105. Finite dimensional filters with nonlinear drift VI-I: Mitter conjecture and structure of  $\eta$  (with Jie Chen), SIAM J. Control Optim., Vol. 35, No. 4, July (1997), 1116-1131.
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