Curriculum Vitae

Name: Tuen Wai NG, Patrick

Nationality: Chinese (Hong Kong)

Language: English, Mandarin and Cantonese

E-mail Address: ntw@maths.hku.hk

Current Address: Department of Mathematics, The University of Hong Kong,
Room 408, Run Run Shaw Building, Pokfulam Road, Hong Kong.
Tel. No. (852) 2859-2250; Fax No. (852) 2559-2225

Education And Qualifications:

1990 – 1993	The University of Hong Kong, B.Sc. (Math)
1993 – 1995	The Hong Kong University of Science and Technology, M.Phil. (Pure Math)
1995 – 1998	The Hong Kong University of Science and Technology, Ph.D. (Pure Math)
1998 – 2000	University of Cambridge, Croucher Foundation Research Fellow
2000 – 2002	The University of Hong Kong, Postdoctoral Fellow
2002 – 2008	The University of Hong Kong, Assistant Professor
2003 – 04 (summer)	Tsinghua University, Senior Visiting Scholar
2007 (spring)	Purdue University, Visiting Assistant Professor
2008 –	The University of Hong Kong, Associate Professor
2009 – 2011	The University of Hong Kong, Deputy Head of Department of Mathematics

Research Interest:

Complex analysis and mathematical biology, in particular, factorizations of meromorphic functions, complex dynamics, complex differential equations and Smale's mean value conjecture, epidemic modelling and biological sequence analysis.

Teaching Experiences

1. Teaching Assistant, The Hong Kong University of Science and Technology (1993-1997)
2. Teaching Assistant Coordinator, The Hong Kong University of Science and Technology (1997-1998)
3. Tutor, University of Cambridge (1999-2000)
4. Lecturer, The University of Hong Kong (2000-)
5. Lecturer, Purdue University (2007, Spring semester)

Courses Taught:

MATH1801	Mathematics for Physical Sciences I;
MATH1802	Mathematics for Physical Sciences II;
MATH0806	Mathematics for Social Sciences;
MATH2001	Development of Mathematical Ideas;
MATH2303	Matrix Theory and Its Applications;
MATH1811	Mathematics I;
MATH1812	Mathematics II;
MATH0011	Number and Patterns in Nature and Life;
MATH2911	Game Theory and Strategy;
YSCN0016	Games and the Mathematical Mind;
YSCN0031	Every Day Mathematics;
YSCN0034	Hidden Order in Daily Life: A Mathematical Perspective;
MATH6101	Intermediate Complex Analysis;
EAM04	Numbers and Patterns: Quantitative Reasoning and Mathematical Thinking;
CCST9017	Hidden Order in Daily Life: A Mathematical Perspective

Students Supervised/Co-supervised:

Chiu Yin Tsang (Ph.D., 2012)
Pak Leong Cheung (M.Phil., 2011)
Liang Xu (M.Phil., 2010)
Yiu Fai Lee [co-supervise with Prof. Pak Shum](Ph.D., 2010)

Chiu Yin Tsang (M.Phil., 2008)
Mingxi Wang (M.Phil., 2007)
Tsz Lung Chan (M.Phil., 2007)
Ching Wan Tai [co-supervise with Dr. N.K. Tsing](M.Phil., 2007)
Yiu Fai Lee (M.Phil., 2006)
Yan Yu Choi (M.Phil., 2006)

Current Students:

Cheung Pak Leong (Ph.D.), Wong Kwok Kin (M.Phil.), Wu Chengfa (M.Phil.)

Awards

1. Sir Edward Youde Memorial Schalorship (1989)
2. Croucher Foundation Research Fellowship (1998)
3. Outstanding Services Award from Department of Mathematics, The Hong Kong University of Science and Technology (1998)
4. Outstanding Young Researcher Award,The University of Hong Kong (2006)
5. Award for Service Contribution 2010-11, Faculty of Science, The University of Hong Kong (2011)

Research Grants

1. Factorization and complex dynamics of meromorphic functions and related topics (2003) [HK$ 411000, Competitive Earmarked Research Grants (CERG)].
2. D-Companion Matrices and Geometry of Polynomials (2005)[HK$ 231000, Competitive Earmarked Research Grants (CERG)].
3. A double epidemic model for SARS propagation (2003) [HK$43500, Small Project Funding from HKU].
4. Exact solutions of algebraic differential equations (2005) [HK$ 28400, France/Hong Kong Joint Research Scheme - Travel Grants].
5. Meromorphic solutions of algebraic differential equations (2007) [HK$ 445000, Competitive Earmarked Research Grants (CERG)].
6. Factorizations and iterations of meromorphic functions and related topics (2009) [HK$ 312,000, Competitive Earmarked Research Grants (CERG)].

7. Smale's inequalities for polynomials and related problems (2011) [HK$ 650,000, Competitive Earmarked Research Grants (CERG)].

8. Vector valued Nevanlinna theory and systems of algebraic differential equations (2011) [HK$ 43,200, France/Hong Kong Joint Research Scheme - Travel Grants].

Publications

Research papers:

1. T.W. Ng and C.C. Yang, Certain criteria on the existence of a transcendental entire common right factor. Analysis **17** (1997), no. 4, 387-393.

2. T.W. Ng and C.C. Yang, On the zeros of $\sum a_i \exp g_i$. Proc. Japan Acad. Ser. A Math. Sci. **73** (1997), no. 7, 137–139.

3. T.W. Ng and C.C. Yang, On the common right factors of meromorphic functions. Bull. Austral. Math. Soc. **55** (1997), no. 3, 395–403.

4. T.W. Ng and C.C. Yang, On the composition of a prime transcendental entire function and a prime polynomial, Pacific Journal of Mathematics **193** (2000), no. 1, 131-141.

5. A.F. Beardon and T.W. Ng, On Ritt's factorization of polynomials, Journal of London Mathematical Society, **62** (2000), no. 1, 127-138.

6. T.W. Ng, An example concerning infinite factorizations of transcendental entire functions, Expositiones Mathematicae **18** (2000), no. 2, 127-130.

7. T.W. Ng, Recent progress on the unique factorizations of entire functions, Proceedings of the Second International ISAAC Congress, Vol.2, 1187-1199, Kluwer Academic Publishers, 2000.

8. T.W. Ng, Permutable entire functions and their Julia sets, Mathematical Proceeding of Cambridge Philosophical Society **131** (2001), no.1, 129-138.

9. T.W. Ng, Imprimitive parametrization of analytic curves and factorizations of entire functions, Journal of London Mathematical Society, **64** (2001), no.2, 1-10.

10. A.F. Beardon, D. Minda and T.W. Ng, Smale's mean value conjecture and the hyperbolic metric, Mathematische Annalen **322** (2002), 623-632.

11. A.F. Beardon, T.K. Carne and T.W. Ng, The critical values of a polynomial, Constructive Approximations, **18** (2002), 343-354.

12. W.K. Ching, S.K. Chung, Y.K. Lau, T.W. Ng and S.P. Yung, A Vector-host Epidemic Model, International Mathematical Journal, pp. 751-755, Vol.2, 2002.

13. T.W. Ng, Smale's mean value conjecture for odd polynomials, Journal of Australia Mathematical Society, **75** (2003), no. 3, 409–411.

14. T.W. Ng, Gabriel Turinici and Antoine Danchin, A Double Epidemic Model for the SARS Propagation, BMC Infectious Diseases **3** (2003).

15. W.K. Ching, T.W. Ng and S.K. Chung, On Modeling SARS in Hong Kong, International Journal of Applied Mathematics, **13** (2003), no. 1, 1–7.

16. W.K. Ching, E. Fung, M. Ng and T.W. Ng, Multivariate Markov Models for the Correlation of Multiple Biological Sequences, International Workshop on Bioinformatics, PAKDD Seoul, Korea (2003), pp.23-34.

17. G. Hui, J.H. Zheng and T.W. Ng, On a new singular direction of meromorphic functions, Bull. Austral. Math. Soc. **69** (2004), no. 2, 277–287.

18. A.F. Beardon, D. Minda, T.K. Carne and T.W. Ng, Random iteration of analytic maps, Ergodic Theory and Dynamical Systems, **24** (2004), no. 3, 659–675.

19. W.S. Cheung and T.W. Ng, A companion matrix approach to the study of zeros and critical points of a polynomial, Journal of Mathematical Analysis and Its Application, **319** (2006), no. 2, 690-707.

20. T.W. Ng, J.H. Zheng and Y.Y. Choi, Residual Julia Sets of Meromorphic Functions, Mathematical Proceeding of Cambridge Philosophical Society, **141** (2006), no.1, 113-126.

21. A.F. Beardon and T.W. Ng, Parametrizations of algebraic curves, Ann. Acad. Sci. Fenn., **31** (2006), 541-554.

22. Chung-Chau Hon, Tsan-Yuk Lam, Alexei Drummond, Andrew Rambaut, Yiu-Fai Lee, Chi-Wai Yip,1 Fanya Zeng, Pui-Yi Lam, Patrick T.W. Ng and Frederick C. C. Leung, Phylogenetic Analysis Reveals a Correlation between the Expansion of Very Virulent Infectious Bursal Disease Virus and Reassortment of Its Genome Segment B, Journal of Virology, **80** (2006), no.17, 8503-8509.

23. T.W. Ng, G. Turinici, W.K. Ching, S.K. Chung and A. Danchin, A parasite vector-host epidemic model for TSE propagation, Medical Science Monitor **13** (2007), no.3, 59-66.

24. Lydia W.T. Cheung, Y.F. Lee, T.W. Ng, W.K. Ching, U.S. Khoo, Michael K.P. Ng and Alice S.T. Wong, CpG/CpNpG motifs in the coding region are preferred sites for mutagenesis in the breast cancer susceptibility genes FEBS Letters, **581** (2007), Issue 24, 4668-4674.

25. Wai-Ki Ching, Yang Cong, Tuen Wai Ng, Allen H. Tai, A fast algorithm for the spread of HIV in a system of prisons. Math. Comput. Modelling **46** (2007), no. 9-10, 1247–1255.

27. Wai-Ki Ching, Yang Cong, Tuen Wai Ng, Zheng-Jian Bai, Some Infection Models for the Development of AIDS, Lecture Notes in Operations Research 9, Optimization and Systems Biology, (2008), 21-28

28. A. Eremenko, L.W. Laio and T.W. Ng, Meromorphic solutions of higher order Briot-Bouquet differential equations, Mathematical Proceeding of Cambridge Philosophical Society, **146** (2009), no. 1, 197–206.

29. T.L. Chan, W.S. Cheung and T.W. Ng, Graceful Tree Conjecture for Infinite Trees, The Electronic Journal of Combinatorics, **16** (2009), Research Paper 65, 15 pp.

30. Wai Shun Cheung and Tuen Wai Ng, Relationship between the zeros of two polynomials, Journal of Linear Algebra and Its Applications, **432** (2010), no.1, 107–115.

31. Robert Conte and Tuen Wai Ng, Meromorphic solutions of a third order nonlinear differential equation, Journal of Mathematical Physics, **51** (2010), no.3, 0335181-03351819.

32. W.K. Ching, L.M. Li, N.K. Tsing, C.T. Tai, T.W. Ng, A.S. Wong and K.W. Cheng, A weighted Local Least Squares Imputation method for missing value estimation in microarray gene expression data, Int. J. Data Mining and Bioinformatics, **4**, (2010), no. 3, 331–347.

33. K.W. Chow and T.W. Ng, Periodic solutions of a derivative nonlinear Schrodinger equation: Elliptic integrals of the third kind, Journal of Computational and Applied Mathematics, **235**, no. 13, (2011), 3825-3830.

34. T.W. Ng and M. Wang, Ritt's theory on the unit disk, Forum Mathematicum (to appear in 2012).

Book:

1. T.W. Ng, An Introduction to John Nash's Nobel Prize Winning Theory, October, 2004.

Invited Talks

1. The First International ISAAC Congress, University of Delaware, USA (Aug 1997).
2. Imperial College, University of London, UK (Jan 1999).
3. The Second International ISAAC Congress, Fukuoka Institute of Technology, Japan (Aug 1999).
4. Function Theory Conference, University College, London (Sep 1999).
5. Special Section on Recent Advances in Complex and Harmonic Analysis, AMS Meeting at Washington DC (Jan 2000).
6. City University of New York, USA (July 2000).
7. Special Section on Value Distribution Theory and Complex Dynamics, AMS-HKMS joint Meeting at Hong Kong (Dec 2000).
8. HKMS Annual Meeting at The Hong Kong University of Science and Technology (May 2001).
9. Computational Methods and Function Theory 2001, University of Aveiro, Portugal, (June 2001).
10. Workshop on Complex Dynamics and Related Topics, the Research Institute for Mathematical Sciences, Kyoto University, Japan (Dec 2002).
11. Complex Analysis-ICM2002 Satellite Conference, Shanghai Jiao Tung University (Aug 2002).
12. Recent Developments in Several Complex Variables, Cauchy-Riemann Geometry and Complex Algebraic Geometry, The University of Hong Kong, China (Nov 2003).
13. Special Section on Value Distribution Theory in Classical and p-Adic Function Theory, American Mathematical Society Annual Meeting, Phoenix, Arizona, USA (Jan 2004).
14. SARS Mini-workshop, The Hong Kong University of Science and Technology, 2004.
15. 2004 International conference on Analysis and Its Applications, Nanjing University, China (July, 2004).

16. 2004 Beijing-International conference on Several Complex Variables, Capital Normal University, China (Aug 2004).

17. Seminar on Public Health and Sustainable Development, The Sustainable Development Unit of the SAR government, Hong Kong, 2004.

18. Conference on Riemann surfaces and Klelinian groups, Research Institute for Mathematical Sciences, Kyoto University, Japan (Dec 2004).

19. Hong Kong Mathematical Society Annual Meeting, The Hong Kong University of Science and Technology, (April 2005).

20. Computational Methods and Function Theory, University of Joensuun, Finland (June 2005).

21. Workshop on Complex and Algebraic Geometry, The University of Hong Kong (July 2005).

22. The 13th International Conference on Finite or Infinite Dimensional Complex Analysis and Applications, Shantou University, China (Aug 2005).

23. Workshop on Complex Analysis, Tsinghua University (April 2006).

24. Seminar in Complex Analysis, Centre for Mathematical Studies, University of Cambridge (June 2006).

25. Geometry Seminar, Fudan University (October 2006).

26. Function Theory Seminar, Purdue University (February 2007).

27. Departmental Seminar, Northern Illinois University (March 2007).

28. Analysis Seminar, University of Illinois at Urbana-Champaign (April 2007).

29. Workshop on Complex Geometry, The University of Hong Kong (July 2007).

30. International Workshop on Value Distribution Theory and Its Applications, Shandong University (July 2007).

31. Summer School on Value Distribution Theory, Jiangxi Normal University (August 2007).

32. One Day Function Theory meeting, London Mathematical Society (September 2007).

33. Analysis Seminar, Christian-Albrechts-Universität (Kiel, Germany) (November 2007).

34. Alan Beardon's retirement meeting, University of Cambridge (December, 2007).

35. Workshop on Dynamical Systems and Analysis on Fractals, The Chinese University of Hong Kong (April, 2008).

36. Workshop on complex dynamics, Fudan University (October,2008).

37. Computational Methods and Function Theory (CMFT2009) (Turkey) (June 2009).

38. Workshop on Complex Geometry, HKU (August 2009).

39. Seminar on Pure Mathematics, HKUST (February, 2010).

40. Hong Kong Mathematical Society Annual General Meeting (March 2010).

41. International Conference on Applied Mathematics, City University of Hong Kong (June, 2010).

42. 18th International Conference on Finite or Infinite Dimensional Complex Analysis and Applications (18thICFIDCAA), University of Macau (August, 2010).

43. Workshop on Complex Geometry, HKU (July, 2010).

44. FIM - Institute for Mathematical Research, ETH Zurich (October, 2010).

45. International Conference on Asymptotics and Special Functions, City University of Hong Kong (May,2011).

46. Conference on Blaschke Products and their Applications Fields Institute, University of Toronto (July, 2011).

47. Workshop on Complex Geometry, HKU (August, 2011).

Public & Community Service

Panel member of CDC-HKEAA Committee on Mathematics Education(Senior Secondary) Working Group on New Senior Secondary Mathematics Curriculum (compulsory Part), 2005-2007.

Chairperson of Test Development Committee (Secondary Mathematics) of HKEAA, 2008-2009.