

# AMAGAZINE

Issue no. **07**

AMA newsletter

Spring 2012

P1-2

## Highlights

P3-5

Events & Activities

P6-7

Students

P8

Alumni

P9

Research

P10-12

Staff

For further information  
about AMAGazine,  
please e-mail us at  
maopview@polyu.edu.hk



## NOBEL LAUREATE VISITING POLYU

Professor John F. Nash Jr., Nobel Laureate in Economics, attracted a large crowd to his seminar on game theory in November on PolyU campus. This seminar was co-organized by Department of Applied Mathematics and School of Accounting and Finance.

Professor Nash is a Senior Research Mathematician at Princeton University, and a world-renowned and esteemed scholar. He is distinguished as one of the foremost mathematical researchers and theorists of the 20th century. He was awarded a Nobel Prize in Economics in 1994 and the Leroy P. Steele Prize by the American Mathematical Society in 1999. He is known for his significant contributions to game theory, differential geometry, and partial differential equations. Prof. Nash is one of the first economists to establish game theory as a central theme in current economic theory. His works have profound impacts on contemporary theories in accounting, computing, economics, finance, mathematics and military.



At the seminar, Prof. Nash presented some of his recent work on game theory. During the discussion session, Prof. Nash provided a lot of insight to students and faculty members on the study and research on mathematics, game theory and their applications.



More event photos are available.



To coincide with Prof. Nash's visit, the Department organized a workshop on Nash Equilibrium and a distinguished lecture on generalized Nash Equilibrium. Guest speakers including Professor Po-lung Yu and Professor Yong Shi exchanged ideas at the frontier of research on Nash Equilibrium and facilitating research collaboration from various research areas in mathematics, engineering and management, while Professor Masao Fukushima led a discussion on both the theoretical and numerical aspects of generalized Nash Equilibrium.



In addition, a general discussion session was held for Prof. Nash to meet with staff and students of the Department. During the 1-hour session, participants showed great curiosity on the research of Prof. Nash and were thrilled to have the life-time opportunity to meet distinguished mathematician. They also raised many interesting questions for this world-renowned mathematician and were provided with insightful answers.

## ACHIEVEMENT

In line with its mission, the Department is committed to excellent teaching and outstanding research in Applied Mathematics. We are proud to have been recognized for our effort in making significant advance in overall academic and research performance. Following is a list of our most recent recognitions and awards.

### THE DEPARTMENT

Mathematics in PolyU is listed in

- The World Top 150 by The QS World University Ranking Agency in 2011
- The World Top 100 by The Academic Ranking of World Universities in 2009, 2010 and 2011

### INDIVIDUAL AWARDS

The President's Award for Excellent Performance and Achievements in Research and Scholarly Activities 2010/2011

- Prof. Chen Xiaojun

The 2011 Hannan Medal for the Mathematical Sciences of the Australian Academy of Science

- Prof. Colin Rogers

The First Class Science and Technology Award of Chinese Operations Research Society in 2010

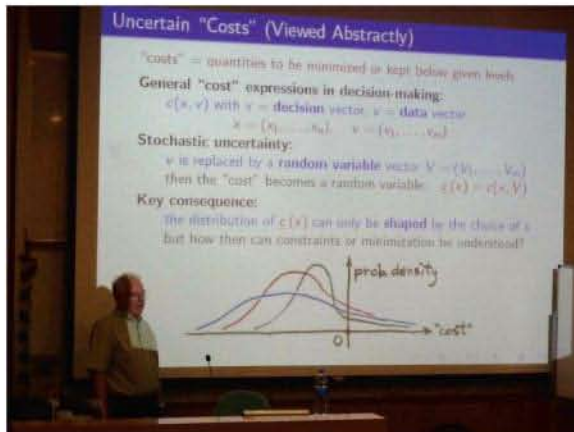
- Prof. Qi Li-qun

Faculty Award for Outstanding Performance/Achievement in Teaching 2009/2010

- Dr. Wong Heung

# EVENTS & ACTIVITIES

## WORKSHOP ON OPTIMIZATION AND RISK MANAGEMENT (6 JULY 2011)



This workshop was organized by the AMSS-PolyU Joint Research Institute. It started with a special keynote lecture by Professor Tyrrell Rockafellar from University of Washington, followed by two other keynote lectures and five invited talks.



## SYMPOSIUM: BÄCKLUND AND RECIPROCAL TRANSFORMATIONS IN MODERN SOLITON THEORY (24-25 MAY 2011)

This two-day symposium was to commemorate Professor Colin Rogers' immense contributions to mathematical physics, leading to his award of the prestigious Hannan Medal of the Australian Academy of Science in 2011. Fourteen speakers from Australia, China, Poland, Italy, Sweden, United Kingdom and USA, were invited to give talks and shared their own stories about Professor Rogers in the symposium.



## THE 2ND AND 3RD WORKSHOPS ON QUANTUM INFORMATION SCIENCE (4-5 JANUARY 2011 / 3-4 JANUARY 2012)



Two workshops on Quantum Information Science were held in January 2011 and 2012 respectively. The series of workshops provided a platform for mathematicians and physicists working in quantum information science to exchange ideas, explore key problems, and share results in the area. Participants include colleagues from local institutions as well as scholars from Canada, China, Japan, and USA.



# EVENTS & ACTIVITIES

## DEPARTMENTAL RETREAT (10-11 JUNE, 2011)

On 10-11 June 2011, the Department retreated to Chime Long Hotel in Panyu, Guangzhou. This annual event put AMA colleagues together to identify, develop and strategize for accomplishing goals and objectives for the new academic year.

The Retreat kicked off with a report session for general relevance issues, followed by a group discussion with focus on teaching quality, communication with students and research quality. Colleagues also took this opportunity to get to know each other through the official gathering as well as the more leisure sight-seeing activities held in the second day of the retreat.



## POLYU INFO DAYS (17-18 SEPTEMBER, 2011)

The 2011 Education Info Days were held on 17 and 18 September. Over 60 students and 40 staff participated and helped to promote the Department and our undergraduate programme to secondary students. This annual event was extended to two days to cater to two batches of applicants, HKALE and HKDSE students respectively.

Four info seminars were held and attracted more than 600 participants, in which the programme design, admission requirements, and career prospects were delivered to the audiences. In addition, three alumni were invited to share their university life & career development in the seminars. The event recorded more than 60,000 visitors and received overwhelming response.



## DISTINGUISHED CHINESE VISITING SCHOLAR (21-25 JUNE, 2011)

### 傑出中國訪問學人計劃 傑出學人成就表揚典禮



Professor Jiang Boju, Member of Chinese Academy of Sciences and Professor of School of Mathematical Science of Peking University, visited the Department on 21 – 25 November 2011 under the University's Distinguished Chinese Visiting Scholars Scheme.

Professor Jiang delivered an open lecture and a seminar on 22nd and 23rd of November respectively, sharing with members of the Department the beauty of topology in nature and its applications to other areas in science such as chemistry and biology. In addition, a presentation ceremony officiated by the President was held on 24 November to honour Professor Jiang and five other distinguished Chinese scholars.



## CHRISTMAS PARTY (23 DECEMBER, 2011)

The Department held its annual Christmas luncheon on 23 December 2011 at Nikko Hotel. The party was attended by departmental colleagues, graduate students, retired colleagues and other senior colleagues in PolyU. Participants thoroughly enjoyed the excellent cuisine as well as the interesting games and lucky draw with fabulous prizes. We wish to thank Fanny and her General Office colleagues for their effort in making this Christmas party a joyful one.



## DISTINGUISHED LECTURE BY PROFESSOR YAXIANG YUAN, (9 JANUARY 2012)



Professor Yaxiang Yuan, Co-Director of AMSS-PolyU Joint Research Institute, delivered a distinguished lecture on 9 January, 2012. In the lecture, Professor Yuen presented a new affine scaling technique for nonlinear programming with simple bounds. Preliminary numerical experience on problems with simple bounds was also reported. It also indicates that this new scaling technique is more effective than that used in the subroutine fmincon from Matlab Optimization Toolbox.

## LONG SERVICE AWARDS (20 JANUARY, 2012)

On 20 January 2012, PolyU presented Long Service Awards to a total of 286 staff members in appreciation of their loyal service to the Institution over the years. Five staff members from AMA received awards this year. They were Dr. Chung Kwok-chiu, serving PolyU for 35 years, Professor Chan Cheong-ki and Miss Margaret Law for 30 years, Dr. Chan Chi-kin for 25 years and Mr. Joseph Cheng for 15 years.



(From left to right) Mr. Joseph Cheng, Miss Margaret Law, Professor Chan Cheong-ki, Dr. Chan Chi-kin and Dr. Chung Kwok-chiu

# STUDENTS

## 1. FRESHMAN SEMINARS - SCIENCE TO IMPROVE QUALITY OF LIFE

This is a newly launched subject offering to Year One students of AMA, ABCT and AP. A series of inspirational lectures and seminars by Chair Professors and renowned experts from various areas were held. It aims to introduce students to applied science disciplines, and enthuse them about their science major study and motivate their career inspirations in the first year of study.



Mr. Dickson Cheung shared his experience in banking industry



Students visited Shatin Sewage Treatment Plant

### Guest of Honour

Mr. Dickson Cheung (Merrill Lynch)

Dr. Boon-ying Lee (Former Director of HK Observatory)

Prof. Yu Cheung-hoi (Chairman of HK Biotechnology Association)

Mr. Timothy Tam (COM of Lingnam Medicinal Manuf. Ltd.)

Dr. Mak Sin Ping (Former Controller of Centre for Food Safety)

### Content

Experience sharing in the Banking World

Weather, science & life

Commercialization in Biotechnology

Modernization of Traditional Chinese (Medicines with Non-Traditional Methods)

Food Safety Control in HK

## 2. SCHOLARSHIPS FOR 2010 / 2011

Scholarship/ Award Name	Student Name	
<b>Bachelor of Science (Honours) in Investment Science</b>		
Dr. Christophe Ping-cheng Yuen Memorial Mathematics Prize	CHUNG Ka Hin	WONG Ka Hei Kevin
HKCC Scholarship	CHUNG Yi Kwan LAI Yee Ting	LUI Ka yan
ING PolyU Scholarship	HO Hang Fung YIU Ho Lung	WONG Yeung Chit
Department of Applied Mathematics Scholarship for Hall Residents	CHOY Chun Yin Andy	WONG Hoi Sin
<b>MSc/PgD in Applied Mathematics for Science and Technology</b>		
Kowloon Investment Scholarships 2010/11	CHAN Chi Yeung HE Cai NG Shui Ming YANG Ruizhi YU Wai Pong	CHAN Hing Keung LEI Lei WONG Tang Paa YU Ching Tung



## 3. THE 17TH CONGREGATION

On 19 November 2011, over 180 graduates ranging from undergraduate to doctorate levels were conferred respective degrees in the 17th Congregation of the University. Our heartfelt congratulations to all our graduates and their family members. We wish them every success in their future endeavors.

#### 4. BEYOND THE CLASSROOM

A series of beyond the classroom activities were organized to enrich student learning and life. Latest activities include:

##### Tea gathering with Mentors (26 Feb 2011)

The Department organized an orientation tea gathering between mentors and students at the PolyU Staff Club on 26 February 2011. There were 55 participants including students, mentors and staff. One of the mentors, Mr. Finsen Chan, Director of Deloitte, shared his experience on career aspect with students.



##### Learning Experience Tours to Chengdu (24-28 May 2011) and Singapore (13 – 16 June 2011)

During the tour to Chengdu, thirty Investment Science students visited Southwestern University of Finance and Economics, Bank of Communications, Industrial and Commercial Bank of China as well as historical and cultural landmarks in Chengdu. Furthermore, 17 students joined another tour to Singapore and visited National University of Singapore, Nanyang Technology University of Singapore and some well-known spots of the city.



In these learning experience tours, students gained a better understanding of recent developments in the Asian financial market and its development.



##### Career Talk by Mr. Jeremy Choy, a Global Investment Banker (14 October 2011)

##### Career Talk by The HK Institute of Bankers (18 November 2011)



##### Actuarial and Investment Workshops by Mr. Simon Lam and his team (8 October & 3 December 2011)

## SHARING OF OUR MSC STUDENTS

### MR. TANG YUK CHUEN

數年前，當好友得知我有意修讀理大應用數學系開辦之科技應用數學碩士課程時，曾奇怪地詢問我是否欲放棄從事多年之機電工程師工作，轉職至金融或精算專業。他們提出這個疑問是可以理解的，原因是課程內有多個科目涵蓋上述兩個範疇，但是他們忽略課程內還有其他與工程有關的科目，包括概率、統計學、運籌學和數學模型等。我的回答亦非常簡單，修讀只是因為「興趣」而並無轉職意圖。其實，我在中小學時期已對數學產生了濃厚興趣，而選擇投身工程師專業更可充分發揮數學方面的知識。至於我對這個應用數學碩士的期望，就是除了可提升數學知識水平外，亦同時獲取系統性解決問題的思維訓練。原因是解答每個數學問題當中涉及多個繁複步驟，學生需從多方面角度思考問題的核心，靈活運用數學知識按部就班，最終才可取得滿意答案。我個人認為分析及解難能力的培養比較灌輸單純的數學知識更為重要。

在申請過程中，我還需出席學系舉辦之入學面試，接受課程主任評估如獲取錄後完成課程的能力，及讓其了解修讀課程之目的與決心。雖然我已經在理大取得多個工程學碩士學位，但需參加入學面試尚算首次，其後由課程主任口中得知，所有申請人不論學歷背景，皆需通過面試階段才會獲取得錄，而學系投放大量人手在面試環節，目的只為挑選出最合適申請人入讀課程，避免學生中途退學，浪費學系資源。我對於應用數學系收生制度之認真及嚴謹，至今仍然留下深刻的印象。

在修讀課程期間，我接觸的老師除了具備高深的學歷及豐富的工作經驗外，還滿懷保育英才的教學熱忱。對於我們這批日間工作、夜間上課的兼讀學生，體諒溫習時間較為不足，故老師鼓勵學生就課堂內容遇上之疑難，積極主動提出詢問，並會不厭其煩地詳細解釋，確保學生緊貼課程進度，期望學生從課程中有所得益。我還記得入學初期，面對緊密的課程進度未能適應，但負責之老師在下課後仍耐心重覆講解課堂要點，再加上自己的努力，終於可趕上課程之步伐，並順利在2009年取得學位。當中老師悉心的指導至為重要，對此本人實在感激萬分。

在回到日常工程師崗位上，我也可以將課程內獲得之知識加以運用，例如在工程管理上可透過繪畫網絡圖(Network Diagram)以顯示各個工序之相互關係，從而利用關鍵途徑分析(Critical Path Analysis)技巧，決定需要重點監控的工序，制訂物料及人手日程表，確保在最高效率及嚴格控制資源下完成項目。另外，藉著數學模型的協助，將工程問題轉為數學模型，在先進電腦高速運算下，迅速模擬在不同條件下，經過長期操作後得出之穩定狀態(Steady State)，因而識別出影響結果之各個因素及條件，從而優化整體結果。我對此課程之實用性給予高度的評價，並向有意修讀高質素數學課程人士作出誠意推薦。



- Graduate of Taught Master Program in Decision Science in 2009
- Working in a slaughterhouse as Deputy E & M Engineering Manager



- Non-local full-time student from 2008 to 2010
- Working in CIRC (China Insurance Regulatory Commission)

### MR. ZHANG XIANG

#### 憶我的點滴理大

帶來理大的夢想，從入港第一天開始為之努力。

學長的經驗幫助自己制定了未來兩年的學習計劃，同窗的幫助促使自己更快的融入新的學習環境，應用數學系帶給我們的則是知識和信息上的補充，老師們諄諄教誨之餘努力為我們提供各種前沿信息，豐富同學們的課餘生活。

於我個人而言，第一個學期努力適應香港的學習生活；第二個學期則參加了證券公司實習和CFA等考試，為隨後的求職做準備；最終進入China Insurance Regulatory Commission (CIRC) 很幸運，也是自己努力的結果。CIRC的申請依次有全國性的公務員考試、CIRC總部的專業筆試、面試、及之後的體檢、政審和公示，整個過程中，在理大學到的知識和學習方法幫助頗多，在此也要感謝我的母校——香港理工大學，及應用數學系的老師們在學習和求職過程中給予我的幫助和支持！



# RESEARCH

## PROFESSOR CHEN XIAOJUN RECEIVED THE PRESIDENT'S AWARDS FOR EXCELLENT PERFORMANCE / ACHIEVEMENT 2010 / 2011

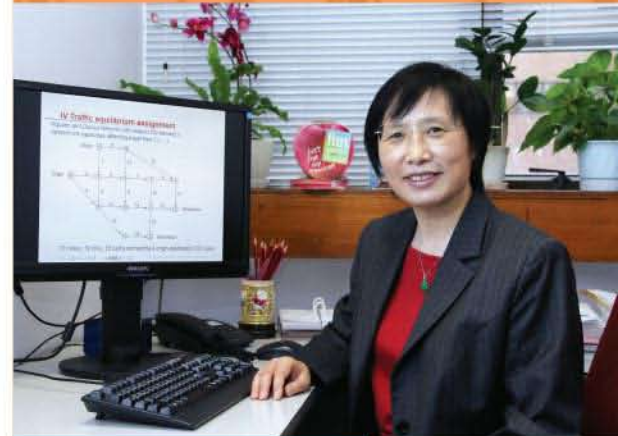
Professor Chen Xiaojun, Associate Head of AMA, was honoured for her outstanding performance and achievements in Research and Scholarly Activities by PolyU President Prof. Timothy Tong in a ceremony held on 25 November 2011.

Professor Chen joined the University as Professor in December 2007 and has made highly significant contribution to the promotion and maintenance of high professional standards in mathematical research in the Department.

She has an excellent track record in academic research and research leadership and made outstanding contributions to both the theory and algorithms for solving nonsmooth, nonconvex optimization problems, stochastic equilibrium problems and nonlinear equations with many important applications in engineering and economics.

### Her excellent research achievements include:

- Published over 80 papers in major peer-reviewed journals, which were cited by many international recognized scholars, including fellows of the National Academy of Sciences, the National Academy of Engineering, the American Academy of Arts and Sciences and the Australian Academy of Science.
- Listed as one of the 1,075 most highly cited mathematicians in the world in 2007 – 2010.
- One of her 2011 papers was listed as one of the top eight most cited papers published in a leading international journal in Mathematical Optimization.
- Invited to give plenary and semi-plenary talks at many international conferences in the USA, Europe, South America and Asia.
- Invited to write a feature article for a special issue of Mathematical Programming to be distributed to all participants of the symposium & all members of the Mathematical Optimization Society.
- Received grants as a principal investigator from various funding agencies such as the Australian Research Council, the Japan Society for the Promotion of Sciences and Hong Kong Research Grant Council. Remarkably, she was awarded four HK GRF grants in four consecutive years from 2008 to 2011.
- Received the first Departmental Best Paper Award in 2009.
- Serves in editorial boards of five international journals in optimization, operations research and computational mathematics.



PROFESSOR | CHEN XIAOJUN



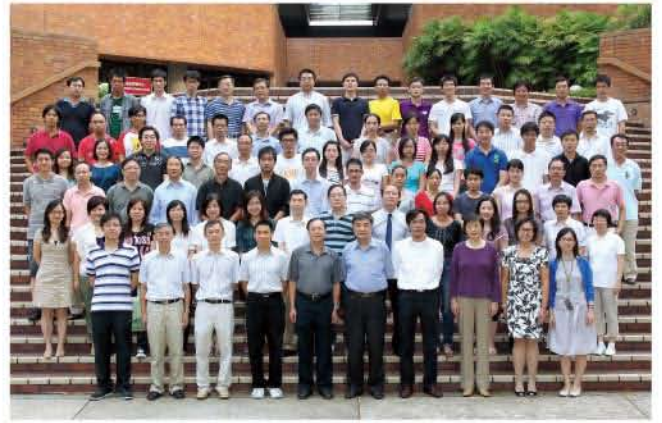
# STAFF

## DEPARTMENTAL BEST TEACHER/ INSTRUCTOR/ TUTOR AWARD 2010/2011

- Best Teacher Award Winner: Dr. Raymond Sze
- Best Instructor/ Tutor Award Winner: Dr. Francis Austin

## NEW STAFF APPOINTMENTS

- The Department was pleased to welcome the following academic and supporting staff joining us in 2010, 2011 and 2012.



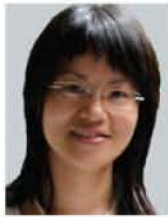
## ACADEMIC STAFF

### Assistant Professors



**Dr. He Dalhai**

- PhD, McMaster University, 2006
- Research interests include biological mathematics, mathematical epidemiology, nonlinear dynamics, evolutionary of complex networks, time series analysis, likelihood-based inference, and gene expression-based cancer prognosis
- Joined AMA in February 2012



**Dr. Liu Chun-ling, Catherine**

- PhD, The University of Hong Kong, 2008
- Research interests include incomplete data analysis, longitudinal data analysis, multivariate data analysis, non- and semi- parametric statistics, linear and non-linear modeling and regression analysis, sequential analysis in biomedical studies, and survival analysis
- Joined AMA as Lecturer in August 2010 and promoted to Assistant Professor in Oct 2011



**Dr. Qiao Zhonghua**

- PhD, Hong Kong Baptist University, 2006
- Research interests include numerical analysis and scientific computing
- Joined AMA in December 2011



**Dr. Wang Zhi-an**

- PhD, University of Alberta, 2007
- Research interests include multi-scale modeling and analysis of chemotaxis, traveling waves of chemotaxis and applications
- Joined AMA in September 2010



**Dr. Xu Zuoquan**

- PhD, The Chinese University of Hong Kong, 2007
- Research interests include mathematical finance/ financial engineering, behavioral finance and optimal stopping problem
- Joined AMA in December 2010



**Dr. Yip Chun Yin, Stanley**

- PhD, University of Southampton, 2010
- Research interests include statistics for climate science, spatial statistics and information theory
- Joined AMA in December 2011



**Dr. Zhang Guofeng**

- PhD, University of Alberta, 2005
- Research interests include quantum information and control, digital control and nonlinear dynamics.
- Joined AMA in December 2011

### Teaching Fellow



**Dr. Chan Chi Pak**

- PhD, The University of Arizona, 2010
- Joined AMA in August 2011

### Tutors



**Mr. Cheung Chung Ching, Thomas**

- MPhil, The University of Hong Kong, 2011
- Research interest is finite geometry
- Joined AMA in August 2011



**Miss Chung Kam Hin, Dorothy**

- MPhil, The University of Hong Kong, 1998
- Research interests include bootstrapping, gibbs sampling, medical statistics and transport modelling
- Joined AMA in January 2010



**Mr. Lee Ka Wing**

- MSc., The Chinese University of Hong Kong, 2009
- Joined AMA in August 2011



**Mr. Liu Kin Yat, Kent**

- MStat, The University of Hong Kong, 2009
- Research interest is econometrics
- Joined AMA in January 2010



**Dr. Tai Hoi Lun, Allen**

- PhD, The University of Hong Kong, 2010
- Research interests include operations research – mathematical modeling and applied optimization
- Joined AMA in August 2010



**Dr. Tsang Fai Lung, Tomas**

- PhD, University of Groningen, 2008
- Research interest is coding theory
- Joined AMA in July 2011

## SUPPORTING STAFF

### 1st row (from left to right)

- Ms Mansfield Lee, Assistant Officer
- Miss Yanee Kwong, Administrative Assistant
- Miss Eunice Hung, Marketing Officer
- Miss Alice Kwong, Executive Officer

### 2nd row (from left to right)

- Mr. John Chan, Office Assistant
- Miss Anita Au, Assistant Officer
- Mr. Eric Lam, Assistant Technical Officer



## PROMOTION

- Dr. Cedric Yiu was promoted to Associate Professor in August 2010
- Dr. Raymond Sze was promoted to Assistant Professor in October 2011
- Mr. Frankie Tsoi and Mr. Angus Yeung were promoted to Instructor in July 2011

## RETIREMENT AND DEPARTURE

The following colleagues have retired / left our Department. We would like to extend our gratitude to all of them for their dedicated service and wish them all the best in their future endeavors.

Mr. Choi Chun Wai  
Dr. Choy Yee Hung  
Mr. Benny Fu

Dr. Ip Wai Cheung  
Mr. Kwan Ying Keung  
Ms Shermie Lee

Mr. Leung Kar Jun  
Dr. Li Leong Kwan  
Dr. Ng Chi Tim

Professor Colin Rogers  
Ms Vicky Wu  
Dr. Philip Yam

Ms Julia Yeung  
Ms Eva Yiu



Photo of Dr. Pang and AMA Colleagues in Dalian, 1 September, 2002

## IN MEMORY OF DR. PANG WAN KAI

We were deeply saddened to learn that our colleague and friend Dr. Pang Wan-kai passed away on 6 May 2011 in Hong Kong after a long illness. He joined the Department as an Assistant Lecturer in 1981, promoted to lecturer in 1984 and Assistant Professor in 1994. He will be sorely missed by colleagues, friends and students.



Photo of Dr. Pang with his daughter in the University of Southampton, UK

### A message from Annie Pang, Dr. Pang's daughter:

*My father always had a strong attachment to the United Kingdom.  
He studied in the UK in his teens and got his first degree there.  
At the later part of his life, he got his PhD from the University of Southampton.  
That was seen as one of his lifetime achievements.  
He also enjoyed spending his summer holidays with his family in the UK,  
where the weather was so pleasant in the summer. During summers,  
he paid visits and attended conferences at different universities in the UK. He met so many friends there.  
He spent such wonderful time in the UK. Breezy summers, friends and family...  
And these wonderful memories are still strongly remembered by his family today.*



Photo of Dr. Pang in the University of Southampton (left) and the University of Plymouth (right), UK

# BABY BOOM!

Our warmest congratulations to Catherine and Frankie who got married in March and June 2011 respectively. We wish both of them and their other halves a long and happy life together. As Catherine also gave birth to a baby girl on 17 December 2011, we urge Frankie to match Catherine's great achievement by working harder. More good news: Raymond and Cedric also got new additions to their families in September and October 2011 respectively. Both newly-borns are girls. Well done Cedric and Raymond. Keep up the good work.



Cedric's daughter  
(姚梓晞)



Catherine's daughter  
Perlie Yu (余臻玥)



Raymond's daughter  
(施晴嬌)



Frankie's wedding



Catherine's wedding

## EDITORIAL BOARD

Prof. Cheong-ki Chan  
Dr. Chun-wah Chan  
Miss Eunice Hung  
Prof. Man-kam Kwong  
Prof. Yanping Lin  
Dr. Raymond Sze

### Department of Applied Mathematics

The Hong Kong Polytechnic University  
Tel: (852) 2766 6946 Fax: (852) 2362 9045  
Website: <http://www.polyu.edu.hk/ama>

Copyright©2012 Department of Applied Mathematics  
The Hong Kong Polytechnic University