The Chinese University of Hong Kong 香港中文大學數學系

DEPARTMENT OF MATHEMATICS

NEWSLETTER 2005-06, Issue 3

Foreword By The Chairman

I am glad to tell you the good news that the Department continues to experience another fruitful year. I enjoy working with my colleagues, sharing their frustrations and challenges, and of course, their excitement and satisfaction too.

We are enthusiastic in attracting the finest faculties and students, raising scholarship funds, and creating academic exchange programs and internship opportunities for our students. You will see in this issue a number of their essays reporting their works in the past year. All of you, friends and alumni, have played an important role in supporting us. Our hard work and perseverance have paid off. We made things happen, and I am proud to be part of this dynamic and vibrant Department.

Last year, the biggest event of the Department was the hosting of the Third International Congress of Chinese Mathematicians (ICCM 2004). There were 750 participants and over 200 plenary sessions, valuable lectures and talks. The highlight of the Congress was the presentation of the Morningside Medals of Mathematics and the Chern Prize, the highest honor for the most significant research achievements. Our colleague Zhouping Xin (辛周平) was one of the awardees. Congratulation to Zhouping! My sincere thanks go to the team who had dedicated their time and energy in planning and organizing this event. I am grateful to Dr. Ronnie Chan (陳啓宗) of Morningside Group, Mr. Bankee Kwan (關百豪) of Celestial Asia Securities Holdings Ltd. and Mr. Samson Tam (譚偉豪) of Group Sense (International) Ltd. Without their support, the Congress would not have achieved so successfully.

Thanks to our University, Professor Andrew Yao (姚期智), the new Distinguished Professor-at-Large, is now affiliated to our Institute of Mathematical Sciences. This gives us a head start in the field of Theoretical Computer. In addition, we have three more new faculties joining us this year. They highly strengthen our teaching programs and raise our research profile in Algebraic Geometry and Analysis.

More good news in research I want to share with you is that, Juncheng Wei (魏軍城) has received the prestige Croucher Senior Research Fellowship. According to the ISI Essential Science Indicator, his work in Mathematical Biology, is ranked globally, 16th out of 894 most cited mathematicians. Can you imagine that five of our staff members are on the list? This is phenomenal! Our research has gained considerable impact internationally. (See the details inside).

Our new initiative is to develop a partnership with the Information Engineering Department in offering a double degree programme to students so they can receive a B.Sc. in Mathematics in the first three years, followed by a B.Eng. in Information Engineering in the 4th year. It will be a demanding programme. But career opportunities for these graduates will be exciting and unlimited, including teaching and research in mathematics and theoretical engineering, as well as working as engineers in different industries. Our target date is to launch this programme in 2006-07. This will be the first one at CUHK. We look forward to making this programme a model for the entire University and explore similar partnerships with the other departments.

Ka-sing Lau

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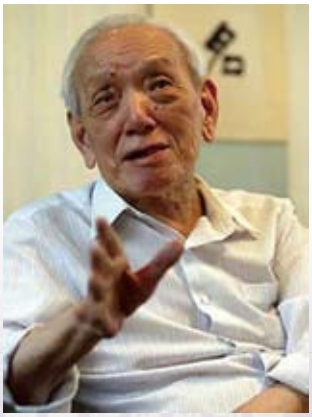
The Third International Congress of Chinese Mathematicians
第三屆世界華裔數學家大會

The International Congress of Chinese Mathematicians (ICCM) is a triennial congress hosted by institutions in Mainland China, Taiwan, and Hong Kong in a rotating basis. The previous two congresses were held in Beijing (1998) and Taipei (2001) with around 500 participants from all over the world. The third one (ICCM2004) was held in Hong Kong in December 17-24, 2004 at The Chinese University of Hong Kong. There were 25 plenary lectures and special sessions on topics in Algebraic Geometry, Applied Analysis, Complex Geometry, Geometric Analysis, Number Theory and Automorphic Form, Mathematical Physics, Mathematical Biology, Numerical Analysis, Probability and Statistics, Waves and Hyperbolic PDE, Wavelets and Fractals, as well as Mathematics Education. Over 750 mathematicians from all over the world participated in the congress.

▲ (Left) Prof. John Coates (Cambridge) and Prof. Dan Stroock (MIT)

One of the highlights of ICCM2004 was the presentation of the Morningside Medals of Mathematics and the Chern Prize. They were awarded in the first day of the congress held at the Hong Kong Convention and Exhibition Center. The Morningside Medals are to honor the most outstanding mathematicians of Chinese descent of age under 45 in their pursuit of mathematical truth. Up to six medals, two gold and four silver, are awarded in each ICCM. A committee of internationally renowned mathematicians selects the medalists. Prof. Zhouping Xin of our Department was awarded the "2004 Morningside Gold Medal" for his contribution in *nonlinear partial differential equations*.

▲ Awardees and Committee Members of the Morningside Medals and the Chern Prize



Prof. S.S. Chern, the Honorary President of the Third International Congress of Chinese Mathematicians (ICCM), passed away on December 3, 2004. Prof. Chern planned to attend ICCM in Hong Kong himself, and to present the Chern Prize and to deliver the Chern Lecture. He had also donated RMB 100,000 to support ICCM. There were memorial activities during the Congress to remember the profound contribution of Prof. Chern and to pay our deepest condolence.

Honours And Awards

2004 Morningside Gold Medal

▲ Prof. Xin (Left) and Prof. Yongxiang Lu (路甬祥)

Prof. Zhouping Xin (辛周平), Associate Director of The Institute of Mathematical Sciences (IMS) and Williams M.W. Mong Professor of Mathematics, was awarded the 2004 Morningside Gold Medal for his research in nonlinear partial differential equations. He recently made two very important research contributions. In the area of boundary layer theory, he proved the global existence of solutions of the Prandtl equations. He also established a new mathematical framework for the study of transonic shock wave flow in a nozzle, and within this framework he addressed and confirmed an old conjecture of Courant and Friedrichs by establishing the stability of such shocks.

Croucher Senior Research Fellowship and the Young Researcher Award

▲ Prof. Wei (Left 2) and Prof. Ka-sing Lau (Right 1)

Prof. Juncheng Wei (魏軍城) was awarded the Senior Research Fellowships of Croucher Foundation and the Young Researcher Award from CUHK in 2005. Prof. Wei is well-known for his research on concentration phenomena in nonlinear elliptic equations and mathematical biology. He published more than 120 papers in top mathematical journals. One of the paper was cited as one of the "hottest" papers in the last ten years by ISI. Prof. Wei joined the Department of Mathematics of CUHK in 1995 as an Assistant Professor, and has been promoted to Professor 1 recently.

Distinguished Professor-at-Large At IMS

Prof. Andrew Chi-chih Yao (姚期智), world renowned computer scientist and Turing Award winner, has been appointed Distinguished Professor-at-Large of the University from January 3, 2005. He is affiliated with the IMS and the CSE department.

Born in Shanghai, Prof. Yao obtained his Ph.D. in physics in 1972 from Harvard University and his second Ph.D. in computer science from the University of Illinois in 1975. In 1986, he joined Princeton University as William and Edna Macaleer Professor of Engineering and Applied Science. In 2004, he became a professor of computer science at Tsinghua University in Beijing.

Prof. Yao is a member of the US Academy of Sciences, a Fellow of the American Academy of Arts and Sciences, and a member of Academia Sinica in Taiwan. He was elected a foreign fellow of the Chinese Academy of Sciences in 2004.

Appointments

Assistant Professors

Prof. Dejun Feng (丰德軍) has been appointed to Assistant Professor. Prof. Feng obtained his Ph.D. degree in mathematics from Wuhan University in 1997 and his research interests are in fractal geometry, ergodic theory and dynamical systems.

Prof. Xiaowei Wang (王曉瑋) has been appointed to Assistant Professor. Prof. Wang obtaind his Ph.D. degree in mathematics from Brandeis University in 2002 and his research interests are in algebraic geometry and geometric analysis.

Instructor I

Dr. Chi-hin Lau (劉智軒) has been appointed to Instructor I. Dr. Lau obtained his Ph.D. degree in mathematics from University of Hong Kong in 2003 and his research interest is in complex geometry.

Academic Highlights

The department continuous to recorded excellence rankings in international recognized surveys. The following are some observations from couple recent reports.

Ranking in the ISI Essential Science Indicators

According to most recent report of the Institute for Science Information (ISI), there are 894 most cited mathematicians and statisticians being listed under that column "Hottest Scientists" of the Essential Science Indicator. On that list, there are only 14 Hong Kong professors, and our department has 5: Professors Juncheng Wei, Zhouping Xin, Raymond Chan, Jun Zou, and Ka-sing Lau. Prof. Wei is ranked 16 from the top (updated September 1, 2005). Moreover, Professors Zhouping Xin, Raymond Chan and Juncheng Wei are also on the "Highly-Cited Papers" list of the ISI.

It is as encouraging that CUHK is the only local institution listed among the 153 international institutions on the list of "Hottest Institutions" in ISI Essential Science Indicators. The ranking of CUHK is 55 according to the citation per paper, the best among all Asian institutions. For your comparison, the ranking of Fudan University, Beijing University, and Chinese Academy of Sciences are 147, 149, and 152 respectively.

According to "citation per paper", the ranking of Hong Kong as a whole is no. 1 out of 81 countries or regions. The following are the corresponding rankings of some other countries: England, 4; USA, 5; Germany, 14; France, 17; Canada, 18; Singapore, 19; Taiwan, 28; Japan, 44; China, 48.

畢業生獲殊榮

自幼醉心數學的楊葆霖(左)及莫仲鵬，03年畢業於中大數學系。憑著卓越的數學表現，他們分別獲得美國著名學府——普林斯頓大學及哈佛大學頒發全額獎學金攻讀博士課程。他們以親身的體驗勉勵年青人，要勇於挑戰，敢於尋夢。

莫仲鵬：「我讀數學純粹為興趣，每當發現一種新的數學計算方法和破解數學難題，我就感到滿足。」

楊葆霖：「數學理論和數學邏輯都很美，即使在數學領域上的重大發現和成就未必能即時應用於日常生活，但研究數學的道路就像遊覽花園一樣，一路上都讓人目不暇給。」

Distinguished Lectures

The Use of Group Theory in Computational Complexity

Quantum Complexity - How Fast Can Quantum Computers Sort?

Communication Complexity - From Classical to Quantum

Professor Andrew C. Yao, world renowned computer scientist and Turing Award winner (equivalent to the Nobel Prize in the field of Computer Science), is the first Chinese scientist to receive this prestigious award.

Some Optimization Problems in Economics

Professor Sir James A. Mirrlees, the 1996 Nobel Laureate in Economic Sciences for his "fundamental contributions to the economic theory of incentives under asymmetric information", has been appointed as Distinguished Professor-at-Large at the CUHK since 2002.

Mathematics is Everywhere

Professor John D. Barrow is a famous theoretical physicist and currently Research Professor of Mathematical Sciences at the University of Cambridge. He is at the same tiome a popular-science writer, playwright and popular science lecturer. He is also the Director of the Millennium Mathematics Project.

Dean's Honours List 2004/05
院長榮譽錄

Year 1

招劍航　方展龍　郭子超　馬　喆　曾家煒
謝樹堂　黃永康

Year 2

陳本善　陳亦儀　張嘉濠　霍志廣　林經洋
麥傑豪　吳嘉誠　蕭子衡　唐本懷

Year 3

陳偉傑　趙克倫　張敏華　鄺國權　劉紹昌
李文俊　李曉玥　伍健佳　王詠駿

Hang Lung Mathematics Awards

恒隆數學獎

In December 16, 2004, there was an unprecedented event held in Hong Kong. Fifteen secondary school teams participated in the defense process of the Hang Lung Mathematics Awards. They had to present their work and be questioned in front of a panel consisting of mathematicians from famous universities over the world. This process was modeled on Ph.D. defenses. While they were presenting, their schoolmates and supporters were watching the event at school through the simultaneous internet broadcasting. After these defenses processes, seven teams were awarded prizes and two given specially commendation. They received the winning honor at the Government House of Hong Kong on the next day.

Their efforts and challenges actually started months ago. There were 112 teams registered in the competition. Teams had to choose their own research topic, complete the research and study, and then submit a written report. Among the submissions, 44 reports were qualified in the screening process. Each qualified reports was then sent to be reviewed by at least two professors from international community. This process was fashioned after academic journal publications. Based on the reviews, the fifteen teams were invited to defend their work.

Although it is a high school level competition, it follows such a rigorous adjudication process and requires intellectual sophistication. This is rare in Hong Kong, or even in the world. We believe a creative new generation of future scientists will grow out of the Awards. The second competition had also been launched in April 2005 and results will be known by the end of 2006.

Website: http://hlma.math.cuhk.edu.hk/

FAN Sin Tsun Edward, *Year 2*
Winner of the HLMA2004 Gold Award

The Hang Lung Mathematics Award promotes good chances for secondary students to have some experience in doing small scale research work, especially for those who likes mathematics very much. I enrolled to it last year, and I was glad to obtain the gold award. It had given me a hard time, but it also gave me a very rewarding experience. Apart from the prize, it had strengthened my confidence and built up my mathematical reasoning techniques.

I entered the mathematics department the same year, and got along with my companions and studied together in groups. I found it rewarding and would like to continue in the coming future.

Many people said that mathematics is only logic deduction, but I think that the insight behind the theory is often more important. So when we learn mathematics, we not only learn the facts from the books, but realize the underlying ideas which is often given by the professors.

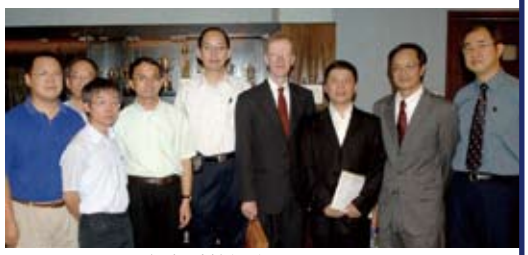
▲ Fan Sin Tsun (Back-left)

"No effort, no reward." Doing mathematics is a life-long hobby whether being a mathematician or not, without patient and passion, one can not really taste the flavour of mathematics. To me talent is the gift of God, but hardworking is of crucial importance.

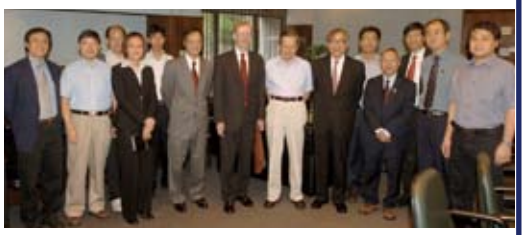
Shaw Prize Lecture in Mathematical Sciences and The Story of Fermat's Last Theorem

邵逸夫數學科學獎講座

當代最優秀的數學家之一，二零零五年邵逸夫獎數學科學獎得主 Prof. Andrew John Wiles 於九月三日在中大邵逸夫堂以 Solving equations 為題作公開講座，熱情的聽眾擠滿了全場一千五百多個座位，當中包括大學及中學學生、老師，可謂盛況空前。



▲ Prof. Wiles 與本系教授合照



▲ Prof. Wiles 與參與講座的各嘉賓合照

▲ Prof. Wiles 與本系學生合照

Prof. Wiles 為普林斯頓大學 Eugene Higgins 數學講座教授，他於十歲時已經對「費馬最後定理」產生興趣，終於在一九九四年成功地將「費馬最後定理」這猜想變成為一個真正的「定理」，破解了這個三百五十多年的數學謎團。

Prof. Wiles 在這次亞洲之行還給我們留下了值得深思的說話：「我認為數學對任何人來說都是有益的訓練，它是對理性和邏輯思維的訓練，同時，它培養直覺，要求一定的心理素質。因此，我尤其認為每一個政客都應該學習數學。」

對於被問及要向大學生推薦幾本他喜歡的書時，他的回覆是：「對數學研究者我可以推薦幾本書，但我並非全才，對其他領域很難推薦。如果是對所有大學生，我得說數學和莎士比亞是相通的。」

跨世紀的數學挑戰？

費馬最後定理

張家麟

Pierre de Fermat
(1601 - 1665)

歷史上，很難找到一個像「費馬最後定理」(Fermat's Last Theorem) 般備受重視的超級數學難題。它的陳述是如斯的簡單易懂，它的難度卻超乎想像，深不可測；它的提出、發展以至解決就彷如「哈里波特」小說的情節，峰迴路轉，充滿傳奇色彩，令人津津樂道。2005年度「邵逸夫獎」數學科學獎得主安德魯・懷爾斯(Andrew J. Wiles)教授正是這跨世紀難題的解決者，他的數學貢獻，實在無與倫比；他的獲獎，確是實至名歸。

費馬定理　驚世難題

費馬(Fermat, 1601-1665)出生於法國，任職律師。他雖然是一位業餘數學愛好者，但他在許多的數學領域如概率論(Probability Theory)、微積分 (Calculus) 等方面均有創見，而對數論(Number Theory)的研究更在當時獨領風騷。他與笛卡兒(Descartes, 1596-1650)被公認為十七世紀上半期兩位最重要的數學家。

古人在閱讀經典，研習名家著作時，往往習慣把註解，或所感所悟，記於書本的空白位置上，這些「眉批」或「詮釋」每每暗藏玄機，成為後人探索前人思想的重要線索。武俠小說更會把這些事情渲染成「前輩高手」將「武功絕學」傳給後人所愛用的「招數」，金庸的武俠小說《倚天屠龍記》中，描述覺遠大師在修讀了「加料」佛經後，在不知不覺間，練成了「九陽神功」便是一例！

費馬在研讀古希臘數學家丟番圖(Diophantus)所著《算術》(Arithmetica)時，以拉丁文在書的邊緣做了很多註解，最為後人注意的是以下的一段話：

「…不可能將一立方數寫成兩個立方數之和；或將一四次方數寫成兩個四次方數之和；或者，總的來說，除了二次方外，任意次方數皆不能寫成兩個同次方數之和。」

這段話用現代的數學語言可更簡單地表達成：

「當整數 $n \geq 3$ 時，方程 $x^n + y^n = z^n$ 沒有滿足 $xyz \neq 0$ 的整數解」

費馬還聲稱：**「我有一個對這命題絕妙無比的証明，但這裏空白大小，寫不下。」**

人們把這一個註解稱為「費馬大定理」或「費馬最後定理」。「費馬最後定理」之所以被稱為「最後」是由於費馬還有不少其它類似的

「註解」，它們或被証明，或被否定，唯有這謎一般的「最後定理」，卻教無數要為它提供完滿証明的智者束手無策，它就像一個揮之不去的幽靈，纏繞困惑了數學界達三百五十多年之久。

懸賞求解　天才折腰

Leonhard Euler (1707-1783)

雖然一般公認，費馬當時不太可能對「最後定理」有一圓滿的証明，但他的「猜想」提出後，卻引來很多數學家的興趣，經一代又一代的數學家如歐拉(Euler)等天才的努力，亦僅能就某些特殊的 n 給出証明。「代數數論」(Algebraic Number Theory)，這重要的數論分支，便是1847年數學家庫默爾(Kummer)企圖為証明「費馬最後定理」而創立的。法國科學院更曾先後在1816年及1850年提供獎金，徵求「最後定理」的解答。

「費馬最後定理」的魅力驚人，傳奇不斷。1908年，一位愛好數學的德國富豪沃爾夫斯凱爾(Wolfskehl)捐出了十萬馬克，設立Wolfskehl獎，作「最後定理」解答的懸賞。有傳聞指Wolfskehl一度有厭世之念，很想自殺，後因投入「最後定理」証明的追尋而打消自殺的念頭。於是他重訂遺囑，以獎金酬謝這救命難題的解答者，條件是必須在2007年之前呈交解答予德國哥廷根大學作評審。在1908-1911年間，便有1000封信寄到評審單位，當然，所有這些努力嘗試都以失敗告終！

Gerd Faltings

在1983年時，德國數學家的法爾廷斯(Faltings)算是走得最接近「解答」的人，他証明了對一固定的n，滿足方程 $x^n + y^n = z^n$的整數解最多只有「有限個」，這漂亮的工作為Faltings帶來數學界的至高榮譽——費爾茲獎(Fields Medal)。

問題解答　初現曙光

「費馬最後定理」的解答如斯耗人心力，難怪1989年電視科幻片集「星空奇遇(II)」(Star Trek: the next generation) 的編劇，曾安心地讓劇中的主角，太空船長Jean-Luc Picard在24世紀的宇宙探索中，聲稱「費馬最後定理」仍是個未解之謎。然而，這卻無礙於1953年4月11日在劍橋(Cambridge)出生的Andrew J. Wiles對証明「費馬最後定理」的決心，Wiles在年僅10歲時候便下定決心要把「最後定理」予以証明。進入劍橋大學的研究院，Wiles在其指導教授John Coates帶領下學習數論中橢圓曲線(Elliptic Curves)的理論，於1977年獲數學博士學位，並於1982年開始任教於美國普林斯頓大學(Princeton University)。及後他注意到數學家里貝特(Ribet)在1986年的工作：「費馬最後定理」包含在「谷山豐—志村五郎」猜想(Taniyama-Shimura Conjecture)中。自此Wiles便埋首於家內頂樓的書房7年，以其聰明睿智，匯集了20世紀數論的尖端成果，完成了一篇長200多頁的論文，以確立「谷山豐—志村五郎」猜想。1993年6月23日，在一次重回母校劍橋大學的研討會上，Wiles宣佈他証出了「費馬最後定理」，此轟動一時的消息立即傳遍世界。

克服困難　最後勝利

其後，數學家們在審閱Wiles的論文時，找到了証明的一些漏洞，要修正這些漏洞，殊非易事，Wiles與他的學生都為此埋首苦思。終於，在1994年9月19日的早晨，Wiles腦際忽地靈光驟閃，讓他找到遍尋不獲，証明所需的最後一塊拼圖，由此，Wiles把原來論証中的所有漏洞都修復了。1995年5月，Wiles在《數學年刊》(Annals of Mathematics)發表了他的歷史性長文「模橢圓曲線和費馬大定理」，把這個困惑人類350多年的難題解決了！為此，觸覺敏銳的電視編劇還得在「星空奇遇 (III)」(Star Trek: Deep Space Nine) 中修訂他們對「費馬最後定理」的說法。

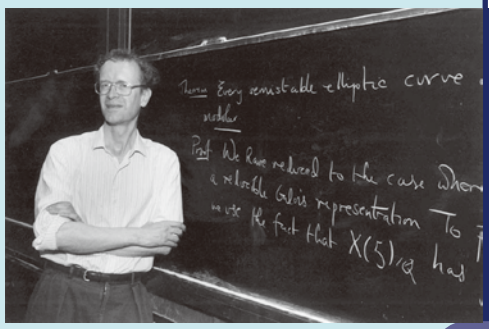
1997年6月27日Wiles獲得Wolfskehl捐出的十萬馬克，在限期前10年圓了歷史的夢。此外，Wiles更為此贏得Wolf獎(1996)、美國國家科學院數學獎(1996)、費爾茲特別獎(1998)及2005年度「邵逸夫獎」數學科學獎等殊榮，可說是名垂青史，美夢成真。

Wiles曾這樣描述他那段追求數學聖杯的七年經歷：

「…或許我該把我研究數學的經驗，比喻成進入一幢烏漆抹黑的房子。你剛踏入時，只見一片黑暗，完完全全的黑暗，你跌跌撞撞，碰到了傢俱。漸漸地，你領略到傢俱的所在位置；而最後，可能是過了六個月左右，你找到了開關而打開燈。忽然間，全室通明，你能清楚看到自己身在何處。然後你又進入另一個黑暗的房間…」

事實上，數學的研究探索，需要一股堅毅不屈的勇氣來支持，令人們可承受那跌跌撞撞所帶來的苦痛。人們對真理的熱愛，以及對發現真理所帶來的喜悅和滿足，正是這份勇氣的泉源。千萬別忘了那些看來黑暗的房間，它可能是先輩耗盡心力為我們搭建的，藉著它，我們才可進入另一個黑暗的房間，繼續探索下去。Wiles解決「費馬最後定理」所應用的20世紀尖端數學，正是無數精英數學工作者以創意和心思所發展出來的。有人質疑費馬是否真的知道如何証明他的「最後定理」，時至今日，這已不再重要了，因為我們已擁有一個「費馬最後定理」的証明，它是350多年來人類智慧的結晶！

有關Wiles証明「費馬最後定理」的感人事跡，還被編成音樂劇「費馬的最後探戈」(Fermat's Last Tango)，並曾在紐約公演。



▲ Andrew John Wiles

Academic and Exchange Activities for Students

This year, the number of students supported by the department to participate in academic and exchange activities reaches a new high.

For the academic activities, we had 14 students joined various study tours during the summer. There were 6 final year (and now postgraduate) students went to the summer school for postgraduate students in Zhongshan University. And there were 8 undergraduate students went to universities in Northern America or Europe for summer programs such as Cambridge University, Caltech, Berkeley, UCLA, Minnesota, and University of Alberta.

Netherlands

CHEUNG Yuen Lam 張婉琳, *Year 3*

When talking about mathematics students, majority would immediate imagine how they sit in front of the desk for several hours struggling to prove a theorem or solve problems. Therefore most people might think that mathematics students, unlike business students who need global vision to excel, are not in great need of going on exchange as business students need to.

My exchange experience in the Netherlands shows that this is not true. I actually spent a whole year on a diversity of subjects — economics, psychology, law and language — but not mathematics. Yet all these could help expand my intellectual thinking by exposing me to different ways of thinking in other academic areas. The applicability of mathematics and, in particular, the rigorous logical thinking skills we learnt throughout mathematics courses in CUHK is so obvious in numerous areas — I feel so advantaged to be a mathematics major!

Exchange is more than fun or being "global"; it is about expanding the scope of thinking. I am so glad to have a chance of having a change and looking at mathematics from other academic areas. I would say in this past year I have learnt more about mathematics amazingly from non-mathematics courses.

▲ Cheung Yuen Lam (Right)

UC Berkeley

TSE Shu Tong 謝樹堂, *Year 2*

WONG Wing Hong 黃永康, *Year 2*

▲ Wong Wing Hong (Left) and Tse Shu Tong

In the last summer, with subsidies from the Chung Chi College, we went to UC Berkeley for a summer study.

It is a precious opportunity to study in UC Berkeley, one of the most prestigious and renowned universities worldwide, with wonderful climate and beautiful campus. We had much interaction with local students as well as other foreign exchange students, especially those who lived in the same dormitory as us. In UC Berkeley, we took some mathematics and music courses, and had the chance to exchange ideas with professors and students from the other parts of the world.

Besides studying, we had biked across the Golden Gate Bridge and had seafood in the Fishermen's Wharf. Apart from going out to San Francisco which is just one hour from Berkeley, we also went to the Yosemite National Park, the Grand Canyon, Las Vegas, Hollywood and the Disneyland in Los Angeles. In these two months, we had really gained much in terms of both our mathematics knowledge and exposure.

Last but not least, we, thirteen students from Chung Chi College, all from different departments and backgrounds, are brought together by this programme. In these eight weeks, we lived together, studied, played and traveled together, made jokes and shared our joy together …… We all share the same experience for the whole two-month time. At times, we encountered problems of all kinds, but together, we were able to work out the solutions. Our friendship is built up day by day, hour by hour, and we are now as close as a family. This is far more invaluable than any other things we gain, and this is what internship or any short term study abroad programme cannot bring us.

CHU Ka Man 朱嘉文, *Year 2*

It's an unforgettable experience to attend the Summer Session in UC Berkeley. I have spent six weeks in UC Berkeley, and I have taken a Psychology course and a Painting class.

I love doing Art, that's why taking an Art course is a must for me. It is really a great experience to do large scale paintings in a professional studio. My life there is just like the one of an artist! In addition to the normal classes, we had to visit art museums each week. And these visits were so significant to me that they change my perspective towards Art!

Due to my tight timetable, I did not wonder around as much as my classmates did. However, I was not disappointed because of this. As I have experienced the education in a famous University, I have enjoyed the lovely weather, I have made friends from different countries, different

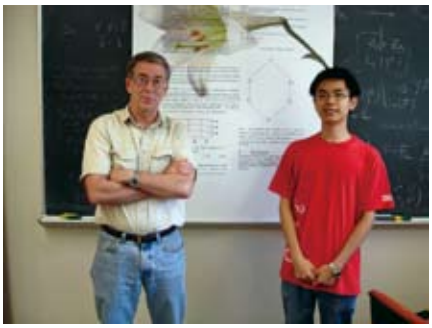
backgrounds, I have felt the liberty advocated in Berkeley…Really a lot of things…

I will miss the life and people in Berkeley!

Caltech

FOK Chi Kwong 霍志廣, *Year 3*

This summer I was selected by the Caltech Alumni Association (Hong Kong Chapter) to take part in the Caltech-Hong Kong Undergraduate Research Fellowship Summer Research (Caltech-HKURF) held in Caltech. Since it was the first time I had traveled abroad, I had been a bit excited yet a little worried before the trip. Looking back, this summer proved to be more pleasant, meaningful and rewarding than I expected.



▲ Prof. Aschbacher and Fok Chi Kwong

In this research program I mainly worked on a group theoretic problem under the guidance of Prof. Michael Aschbacher, a mathematics professor from Caltech and a leading figure in the field of group theory.

The experience of working with a foreign professor on an unfamiliar topic was definitely an unforgettable one. This presented me with an unprecedented challenge. Things didn't go smoothly at the beginning. I was rather puzzled as to how the problem should be defined and what direction I should take. But as time went by, I became more and more confident and used to doing mathematical research, thanks to my mentor's guidance and patience. I was glad that by the end of our collaboration, I had deepened my understanding of advanced group theory. Indeed, this research project had added a whole new dimension to my mode of learning mathematics and familiarized myself with the nuts and bolts of doing academic research.

The whole summer was not solely for academic. There were lots of supporting activities organized by Caltech for program participants. These included dinner workshops aiming at helping students identify their personalities and find their career paths, Rose Bowl carnival on 4/7, a trip to Venice Beach, skating in Pasadena, international film screenings, and a philharmonic orchestra performance. I got to know quite many other students in these activities. The residence where I lived regularly held night gathering. There I could meet many other program participants and chat with them leisurely about our projects and future plan. These activities provided us with relaxing moments after the arduous research work.

By the end of my stay in Caltech I had nearly finished my report. The two months I spent in the US was like a dream to me. There were so many 'first time' experiences and sweet memories that I have been intermittently recalling them after I returned home. Thanks to this research program, I was given a taste of doing research, from which I benefited a lot and it bolstered my determination to devote myself to the academic career path.

廣州中山大學

LAU Siu Cheong 劉紹昌, *M.Phil. Year 1*

「全國研究生暑期課程」！多麼宏大的名字。這是我第一次參加這類「全國性」的活動。帶點興奮，卻也帶點忐忑，我和另外五位甫升上研究院的同學，參加了這次交流。

課程內容比起以往深了很多，這可說是一個越級挑戰！我選了三個課程，每個課程設六次講座。每天我都要花大量的時間，快速學習課程所需的預備知識，以至對課程真正的內容稍加理解。其中最感興趣的，是曹懷東講的 Ricci flow。課程展示了方程與幾何的密切聯繫：Ricci flow 只是一條看上去很簡潔的偏微分方程，卻描述了相當複雜的幾何現象，更和宏觀的物理現象密切相關。

期待再一次的同類活動！

University of Minnesota

LI Man Chun 李文俊, *Year 4*

從事數學研究一直是我的理想，幸運地，今次有機會參加由美國明尼蘇達大學University of Minnesota (Twin Cities) 所舉辦的 2005 Summer REU (Research Experience for Undergraduates)。整個計劃由六月開始到八月結束。在Professor Victor Reiner 和 Dennis Stanton 的帶領下，我連同其他四位美國當地的數學系本科生一起從事有關組合學的研究工作。是次計劃的確令我獲益良多。

我發現自己非常喜歡研究的過程，進一步肯定了自己的興趣。另外，我深深感受到當地濃厚的學術氣氛，大家都很積極主動地發表自己的意見和看法，並且加以討論，能夠和一班熱愛數學的朋友一起學習討論，確是一件令人興奮的事。這次是我第一次遠赴美國，無論在學術上，文化上都令我大開眼界。這次遠行確實收穫甚豐，除了更熱愛數學之餘，還認識到很多來自世界各地的朋友，更給了我獨立的機會，無疑此行會是我人生經歷裡非常重要且難忘的一刻。我亦借此機會向溫有恆教授及梁迺聰教授表衷心的謝意，感謝他們所給予的機會，鼓勵和支持。

Summer Internships for Students

The department is very grateful to our sponsors for supporting our internships. Our students are given precious opportunities of practical training in these schools, organizations, and companies. In this issue of the Newsletter, some students have shared their experience of being interns in the business sector. Their exposures also indicate the growing importance of mathematics abilities in commerce.

The CASH Group has been supporting our department for many years. Our students have been motivated in developing future career through their internship experience. Many of them pursue further education in financial mathematics, logistics and operations research.

▲ Mr. Bankee Pak-hoo Kwan Chairman & CEO, CASH Group

Mr. Bankee Kwan of the CASH Group is well-known for his magnanimity towards those in the community. The CASH Group is committed to responsible involvment within the wider community. Mr. Kwan has a genuine concern for humminty and for education. He is a Harvard fellow and a trustee of New Asia College. He has particularly contributed to mathematics in various ways. Besides supporting the internship, he has donated many scholarships to the department; has made generous contributions to The Institute of Mathematical Sciences and has led the fund raising committee for the International Congress of Chinese Mathematicians. We are indeed fortunate to have his support on mathematics and education.

Our department also has a special overseas internship this year. A large logistic company, GENCO, U.S.A. is the host. The company had offered similar sponsorship before. Thanks to the co-sponsorship of the Jockey Club Hong Kong, the financial difficulty has been resolved. Our students are really lucky to have the training and cross-cultural experience at the same time.

Besides the above mentioned, PCCW joined in the first time and several students gained valuable experience for two months in their company. Four secondary schools had provided teaching opportunities for 11 undergraduate students during the past school year. These organizations had given memorable career preludes to young persons, who will keep to their heart for life.

CASH Group, Pricerite Store Limited

WONG Chun Hung 王俊雄, (崇基05)

During the last summer holiday, I was nominated by Mathematics Department, CUHK to join the summer internship in CASH Group, Pricerite Store Limited (PSL) for two months. It was a valuable and fruitful experience working in a business company before I designed my future career.

In PSL, the major duty was to conduct a marketing survey on furniture stores in Hong Kong and mainland China. From designed to collecting data, and to give a brief analytical report. This survey tried to provide a picture on furniture market and customers behavior to design a new brand name furniture chain store.

Although the working content in a business company was different from being in an academic institution, the experience enhanced my problem solving in tackling business problem. Meanwhile, it also was a challenge to cooperate with supervisors, peer colleague and different parties whenever necessary. It polished my coordination and operating skills.

It is sure that what I learnt in PSL during this summer cannot be replaced by reading several books in theory such that one may say one must success in these contents. A business and lively content provides a practical environment for me to grow and learn.

May I quote a term to conclude the experience: Individual Intensive Summer Tutorial in Business.

- This tells not learn from others, but to learn by oneself proactively whenever there is chance.
- This tells not an academic lecture, but tangible and practical duties should be finished.

Last but not least, the company involved me a good chance to follow a new brand name chain stores developing, this provided me more opportunities to learn more. Moreover, without the summer internship nomination organized by Mathematics Department, I am sure it is hard for me to contribute in such a good working environment.

GENCO

黎善莊，梁鳳賓，蘇悅貞，
數學系三年級

二零零五年七月二十九日，晴。柔和的陽光照在匹茲堡機場的每一角落，也為正要出發的旅客加添一點生氣。在大部份的「金髮」人中，突然出現了三個拿著行李的黑髮女孩子，包括黎善莊(Rowena)、蘇悅貞 (Erica) 和梁鳳賓 (Jessica)。她們用著經過六星期在當地訓練的英文與當地人溝通，而從她們欣欣期盼的眼神也可以感覺到她們在這旅程的得著遠比手上的行李還要多。

這是數學系今年的一個實習計劃，與美國匹茲堡一間物流公司(GENCO) 主辦，贊助者除了數學系以外，還有賽馬會。我們在該公司的研究及開發部 (Research & Development Department) 工作六個星期，主要是負責把我們在大學所學習的知識應用在一個軟件的新版本，並為已有的資料建立數學模型並作出預測。而在完成這個研究後，我們向同部門的同事匯報成果。

我們實習的公司是全美國第三大物流公司，也是一間家庭式經營的私人公司 (family private firm)。我們實習的匹茲堡分公司人數有二百多人，加上公司使用彈性工

▲ 在 GENCO 跟負責人合照

時制 (honest system)，不論在家或在公司，只要在指定時間完成工作就可，因此我們的工作壓力不算太大。由於員工人數不多，我們與同事交流的機會也不少。在工作較少時，我們便會和鄰座的同事們分享香港的文化，也會聽他們說說當地人的生活。至於公司更會定期舉行聯歡活動，如員工感謝日 (teammate appreciation day) 等，透過這些活動，可使我們加深認識其他同事。

至於週末，我們常常都會有不同的節目，包括了划艇、打高爾夫球、嘗試不同國家的美食、在當地遊覽…當中最難忘的不乏當地負責人 KC 作嚮導的加拿大日 (Canada Day) 尼加拉瓜之旅及美國獨立日 (Independence Day) 市政公園之行。尼加拉瓜是美國最著名的大瀑布，有幸看見它的雄偉，湖水傾瀉而下，真的一見難忘；獨立日當天的熱鬧情景，讓我們體驗了當地人民的愛國文化。

這六個星期的實習，實在為我們帶來了不少得著。由於我們三人對是次研究，甚至對匯報都有不同的看法，因此我們學懂了怎樣求同存異，也學懂了與不同的人相處合作。另外，是次計劃也為我們擴闊了不同層面的視野，包括知識上及文化上。由於我們平常也只是在課室裡「做數」，是次體驗讓我們看見實踐和理論確會有差異。此外，我們也對「大美文化」有更深一層的認識。事實上，在漢堡包文化之外，當地人的禮讓及友善也確實使我們大開眼界！

除了文化，我們的英文程度當然也提升了不少啦，哈！只要我們肯踏出與當地人溝通的第一步，便會有意想不到的收獲！還有很多很多的個人得著，因篇幅所限，筆者未能一一詳述，但是，可以肯定的是，這三位女孩的所得確實不少呢！

最後，我們要向籌辦是次計劃的劉家成教授及 GENCO、當地負責人劉家聰先生、實習前為我們導修的陳漢夫教授、以及協助我們申請資助的鄒軍教授致謝！沒有你們，我們也不能有這個美滿的旅程！

▲ 我們三人被邀到 Professor Lau 家中 BBQ!

PCCW

NG Tsz Hing 吳子鑫, *Year 3*

I am deeply grateful for the fact that the department nominated me to work at the PCCW Limited this summer. I think I really learned a lot of things through this internship program. I have gained self-confidence in talking to others as I needed to call the customers and receive their calls back. I learned more functions of MS Excel as I often used it to present the data. Of course, I learned so much about the operation of the department, PCCW and the telecommunication business in HK.

About the department that I worked at, most of my colleagues are very young like me and therefore we got to known each other very quickly. We still keep in touch although I have left the company already. The jobs in the department are really labour intensive and repetitive, but things need to be done very accurately because it often involves some personal details, e.g. ID, phone number. Talking about ID, I have introduced a checking digit method to them to ensure that an ID number is valid. In fact, I do not know why they have not heard of this method before. Anyway, this may be my small contribution to the company.

Finally, I would like to thank you and the Mathematics Department again for giving me the chance to work at PCCW. I will treasure this wonderful experience.

系會消息

各位好！我是本年度香港中文大學數學系系會幹事會會長黃鐳鈞。我們的名字是Operator，象徵我們致力運作本系會，服務全體本科生，亦維繫同學與教職員的良好關係，作彼此溝通的橋樑。

我們今年最大的突破便是聯同四院系會舉行交職典禮。當晚除邀得溫有恆教授及梁子威教授出席外，更幸得校內其它學系及友校數學系的學生組織撥冗蒞臨，為往後的合作奠定基石。

最後，不得不感謝系方撥款翻新學生休息室：現在的系室好多了！

▲ 數學系系會暨四院數學系系會交職典禮

Enrichment Programme for Young Mathematics Talents

數學英才精進課程

不經不覺，「數學英才精進課程」成立至今，已有數年的歷史。從前的學生，今天都上了大學，並把我們的理想與名聲，帶到各地。我們為他們在數學領域中成長茁壯而高興，為他們在大學裡名列前茅而驕傲；我們總期待能夠透過不同的媒體，獲悉舊生的近況、分享他們在外地生活與求學的所見所聞。

▲ 2005-06 暑期班助教

如往年一樣，我們的暑期課程總有一批留學海外的助教，今年的這批助教，不少更是以前的學員。他們帶著Cambridge、Chicago、New York、Yale的生活經驗，換了另一個身份重臨中大。除了擔任助教外，又參與數學系學生的小組研討班，再一次投入中大的學術環境，享受中大的學術氣氛。回想他們從前在這個課程的日子，短的幾個月，長的也只是一年，而且碰上是高中最緊張的時段，實有相聚匆匆，意猶未盡之歎。現在他們在離港經年後，趁暑假回來，為課程的同學服務，我和各同事都十分鼓舞。大家都把握時間，為他們尋找機會，讓他們能在課堂內外都多有進益。

這個課程的未來，全賴教授、客席講者、助教和學生携手共創。過去我們的教授寫過他們的心得，今年，讓我們分享一下助教和學生的感想。希望有一天，從前的學生、今天的助教，會成為未來的客席講者和教授。

EPYMT課程主任　區國強教授

課程網址：http://www.math.cuhk.edu.hk/epymt/

From our Students

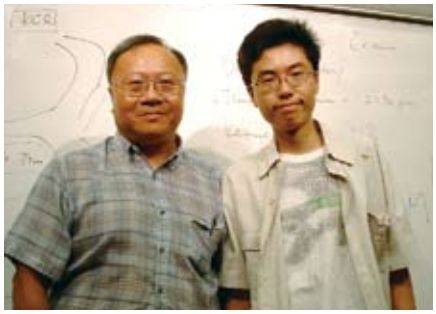
FUNG Kit Ling Daisy
St. Mary's Canossian College
(05 Summer Class)

I am very happy that I have joined the summer EPYMT class as I really learnt a lot from the course. Although some of them were very difficult, I still enjoyed learning them. It was a precious experience.

麥洛軒
聖公會鄧肇堅中學
(04-05 學年榮譽生)

上了EPYMT後，我才覺得自己是剛剛開始接觸數學真的一面。無論是微分幾何、數論又或是數學分析等，導師都能將當中數學抽象的概念以及當中嚴謹的邏輯展示於我們的眼前，讓我們感受到數學藝術性的美。

然而最重要的，卻是教懂了我對每一樣事物都可以用一種邏輯性的思考去剖析，跟TA的討論過程中又刺激我們從不同的角度看同一條問題，又結識了一班喜歡數學的朋友，此等機會實在難能可貴，我又希望借此機會感謝教導我的導師同學。無論將來有沒有興趣修讀數學的人，實都應該把握這個機會接觸一下數學真實的一面。



▲ 麥洛軒 (右) 與鄺英銓教授合照

From our TAs

SUN Kit Yee Phyllis, *05 TA*
Yale University

Two years ago, EPYMT opened up a whole new dimension of my understanding in mathematics when I came as a student. I still remember vividly that on the first day of class, there I sat in the middle of the lecture room, feeling lost and intimidated by the difficult math and the math talents surrounding me. Two years flew quickly, and I was back in EPYMT again, except that this time I was no longer a student, but a TA instead.

The class that I was helping in was Towards Differential Geometry. Even though I already learned similar topics in the past year, the lectures were a very good revision for me. Prof. L.F. Cheung's lectures not only consolidated my understanding in this subject but also offered me new insights in interpreting geometrically some otherwise abstract concepts, such as Gauss map and Gauss Curvature.

▲ Fung Kit Ling (1st row left 2), Leung Kit Fai (1st row left 5) and Sun Kit Yee (1st row left 4)

However, most of my learning experience came from interacting with and being challenged by the students. The questions they ask often prompted me to think deeper, and every time after explaining to them, I found myself having a more thorough understanding on that particular area. I confess that there were times when I found myself not knowing the answer. When it happened, I felt bad, yet I knew this unpleasant feeling was beneficial to my learning because it revealed my inadequacy and would motivate me to work harder. Other than that, interacting with other TAs was a fruitful experience too because many of us came from different places, thus having diverse mathematical backgrounds. So there were a lot for us to learn from each other. In particular, I was encouraged by some CU student who were so passionate about mathematics that they could engage in discussions for hours and hours and forgot about their meals.

Standing at another position in EPYMT this summer offered me an entirely different perspective, and it turned out that I learned even more that I did two years ago. This may sound a little strange because TAs are expected to teach instead of learn. But for me, it was precisely this teaching process from which I gained most. EPYMT, for the second time, became an invaluable experience in my pursuit of mathematics.

LEUNG Kit Fai Tom, *05 TA*
University of Cambridge

The place that the course hold is wonderful (as in CUHK), Prof. Cheung and Prof. Au are so talented, well-patient and, most importantly, witty all the time. Besides, the workload for being as a TA is suitable, plus the students were keen on learning new stuff, which made my work easier. The course not only brought me a great chance to help people with my knowledge (sort of self-achievement, I'm so happy with that), but it also led me to the higher and more sophisticated thinking of Maths. Indeed, I have been benefited a lot from the course, and surely, I hope to be able to help in any other course of maths in the furture. Thank you for making me a fantastic time during the course.

LEUNG Ho Hon, *04 and 05 TA*
Imperial College, London U

As a TA for two consecutive summers in EPYMT, I actually gain a lots. Just before I worked in EPYMT for the first time, I doubted if I could do it well, since the materials delivered to the secondary school students was at university level and indeed I was not very familliar with the materials myself too. I did not deny I was worrying about this at that time. But the turn out was quite surprising.

First, I learned how to explain something non-trivial to them. I did not have such experience before since I had never been a teacher. Also, the experience through interacting with the students is invaluable. They may ask something fundamental and also trivial to advanced-undergrad, but this is a very good phenomenon since I always believe that asking the most appropriate questions is the starting point of doing mathematics seriously. Last, I also gained from discussions between the other TAs. Through such interactions, my view on mathematics was broaden. In fact, I did not have frequent discussions with my coursemates in UK because most of them do not tend to do serious mathematics. Therefore, I really enjoyed the work and that's why I joined it again in the summer just passed.

Learning something totally new and outside the school syllabus is very important for secondary students to relieve their pressure from the exam-oriented school life in HK. So I sincerely wish all students who are determined to learn more should join this programme. I am sure they will not be disappointed.

▲ Leung Ho Hon (Front-left 1)

TAI Cheung Wai Gerald, *05 TA*
University of Cambridge

This summer experience was really invaluable. I realize that teaching is never an easy thing. It is important to know thier difficulties in this course well, for a start. Moreover, I had to ensure that they understand my explanation on the material / assignments. Teaching them also benefited me as I can understand the material better. This expereince also enabled me to earn money by myself for the first time in my life.

CHONG Fan Fei Clark, *05 TA*
University of Chicago

I am really grateful that I was offered the job as a Teaching Assistant in the EPYMT Summer programme this year. To me, it is much more than simply a summer job. Before taking up the job, what I expect to gain from it (apart from the monetary reward) is mainly teaching experience (which is in itself invaluable). This turns out to be quite far away from the reality.

Through helping with the tutorial session of the Preliminary Workshop and the Main Course, I did have a lot of chance to practise explaining what I know to my students and hopefully I have become a better teacher than I previously was. However, my role as a teaching assistant does not characterize my whole experience here. In fact, I would consider my experience as a student of Math during the period to be more rewarding and more memorable.

This is actually second time I "took" the EPYMT course on non-Euclidean Geometry. With more background in Mathematics, and having an instructor who welcomes almost all types of questions, I was able to apply what I learn during my first year (in univeristy) and get a better understanding of the topic. This is truly exciting! Besides, I also have the chance to have a taste of topics in Algebraic Number Theory and Quaternion by attending the study group and extension class with other math lovers of the programme. I was introduced some fascinating results in the above areas and I was motivated to explore my interest in Algebra in the coming year.

In addition to all the teaching and learning experience that I enjoyed, there is yet another benefit: you get connected to the CUHK faculty and the Mathematics students from different universities. I was working on an independent study project on Chaotic Dynamical System this summer and I got stuck in the middle of it. I was offered help by quite a number of people whom I knew through EPYMT. If it had not been their help (in particular that from Prof. Au), it probably would take much longer for me to figure out what I should work on in order to get out of the stagnancy. I am really thankful to them.

This experience which I have at CUHK this summer is just so amazing. I am glad that I decided to go for it in the first place.

▲ Chong Fan Fei (Front-right 1)

*Number Theory As An Organic Unity**

莫仲鵬（崇基03）

Mok Chung Pang graduated with first class honour from CUHK in 2003, was immediately admitted by Harvard with fellowship to further his studies in Mathematics. He is now a Ph.D. caniddate working in Number Theory.

Number theory, one of the oldest branches of mathematics, has a unique position among others: an umbrella manifesting the unity of mathematics. As such, it's worth called the most beautiful of all mathematical subjects.

My first acquaintance with this subject came with the book "Introduction to Number Theory with Computing" by R. Allenby, which I read as high school student. There I learned about three deep theorems in number theory: Gauss' law of quadratic reciprocity, Dirichlet's theorem on primes in arithmetic progression, and the Prime Number Theorem (whose proof was sketched by Riemann). Allenby does not prove the latter two, but comments that these require tools from (complex) analysis. Looking back, it's amazing how much of modern number theory can be traced back to these three theorems.

My appreciation of the real significance of these theorems came much later. But at that time, Dirichlet's theorem and the Prime Number Theorem were already very striking to me: Dirichlet and Riemann used infinitesismal calculus to prove something about the discrete world of integers.

Another book which influenced me a lot is I. Stewart's book "Algebraic Number Theory", where I learned about the proof of quadratic reciprocity.

These books reveal the pivotal role of number theory and how questions arising there motivated the development of other branches of mathematics. Further witnesses of such links in contemporary mathematics abound (e.g. impact of Weil conjectures on development of algebraic geometry). This is what gives number theory its charm, its organic unity, and its unique position in mathematics.

* This is an abridged version of an article by the captioned author. For the full version, please refer to: http://www.math.cuhk.edu.hk/newsletter/mok.html

Visitors

Each year, the Department and The Institute of Mathematical Sciences received many visitors. They come from all over the world and for various periods of time, participate in our seminars and sometimes teach courses. These attested the attractiveness and international nature of our programmes. The following is a partial list of them in 2004-05.

A. ADIMURTHI, *Tata Institute of Fundamental Research, India.*

John BARROW, *University of Cambridge.*

Tony CHAN, *University of California, Los Angeles.*

Hua CHEN, *School of Mathematics and Statistics, Wuhan University.*

Zhiming CHEN, *Institute of Computational Mathematics, Academia Sinica.*

John COATES, *University of Cambridge.*

Yinbin DENG, *Huazhong Normal University.*

Ai-Hua FAN, *de d'Informatique, Universite' de Picardie, France.*

Alexander GRIGORYAN, *Imperial College, London, UK.*

Yi HU, *University of Arizona.*

Ralf HIPTMAIR, *ETH Zurich, Switzerland.*

Juergen JOST, *Max-Planck-Institut fuer Mathematik, Germany.*

Lishan KANG, *Wuhan University.*

K.C. LAU, *Senior Vice-President, GENCO.*

Chun Kong LAW, *National Sun Yat-sen University.*

Christopher J. LENNARD, *University of Pittsburgh.*

Peter LI, *University of California, Irvine.*

Yong LI, *Tsinghua University.*

Xiao-Song LIN, *University of California, Riverside.*

Yanping LIN, *University of Alberta, Canada.*

John LOFTIN, *Rutgers University.*

Feng LUO, *Rutgers University.*

John MORGAN, *Columbia University.*

Wei-Ming NI, *University of Minnesota.*

Duong H. PHONG, *Columnbia University.*

Yat-Sun POON, *University of California, Riverside.*

Dan STROOK, *Massachuset Institue of Technology.*

Xiaotao SUN, *Institute of Mathematics, AMSS, CAS.*

Jinchao XU, *Penn State University.*

Masahiro YAMAMOTO, *Tokyo University.*

Stephen S.T. YAU, *University of Illinois at Chicago.*

Lo YANG, *Institute of Mathematical Sciences, Academic Sinica.*

Jingxue YIN, *Jilin University.*

Pingwen ZHANG, *School of Mathematical Sciences, Peking University.*

Huijiang ZHAO, *Wuhan Institute of Physics and Mathematics, Academia Sinica.*

獎學金及活動基金

蒙各界友好及校友的熱心支持，過去一年我們共籌得超過二十萬元的獎學金及活動基金；並成立了**香島教育基金數學獎學金**。對於各位的捐助，我們在此深切致謝！

捐款機構：香島教育基金有限公司

捐款人名單：(以姓氏英文次序排列)

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潘嘉陽	潘偉賢	潘日新	成耀明	王雄平
黃毅青	王華峰	楊立人	楊佩珊	余偉權
余國材	鄭喜印			

校友消息

多倫多校友聚會

麥裕新（聯合70）

二零零五年七月初，聯合書院理學院校友在多倫多舉辦了一次聚舊晚宴，校友暨家眷共四十多人出席，大部份校友來自北美，不少校友駕駛超逾十小時前來參加，亦有來自香港的，濟濟一堂，好不熱鬧。未見多年的老同學，一旦重逢，共話當年，歡愉之情，溢於言表。來自數學系者，竟成少數民族，只有七人，七一年畢業的小師妹，已是系中出席最年輕的，相信有不少更年輕的數學系校友，現居多倫多或北美，可惜失去聯絡，未能相約出席。希望下次聚會，能有更多校友參與。若有校友旅遊或移居多倫多，可與聯合書院安省校友會聯絡，或通知本人亦可，冀能安排與昔日同窗一聚。

◀ 左起：
黃定樺 (71)，
林寧輝 (66)，
伍志達 (67)，
麥裕新 (70)，
梁炎堂 (67)，
張龍昌 (68)，
曹沛高 (69)

聯合書院安省校友會：UCCU Alumni Association (Ontario)
校友會電郵：united_college@yahoo.ca
麥裕新電郵：Mak_Yu_Sun@alumni.cuhk.net

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校友姓名：_____（中文）
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畢業年份：_____ 書院：崇基／新亞／聯合／逸夫／研究院
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5： 請將填妥的表格及捐款支票寄回聯絡人：

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Department of Mathematics
The Chinese University of Hong Kong
Room 202 Lady Shaw Building
Shatin New Territories
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香港新界沙田

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柳愛華紀念科學講座

講題：數學在資訊時代的貢獻

日期：2005年11月19日

地點：香港中文大學邵逸夫堂

講者：陳漢夫教授

語言：廣東話

簡介：在我們生活的資訊時代裡，幾乎每樣東西都可以轉換成數字。互聯網上的圖像、流動電話裡的聲音、Google的搜索結果等，皆需應用精密的數學才可行。在這次講座中，我們將討論數學在數字時代的廣泛應用。

網址：http://www.cuhk.edu.hk/sci/memorialtalk/

數學新浪潮

講題：博奕論知多少？What is Game Theory?

日期：暫定為2006年2月初

地點：香港中文大學邵逸夫堂

講者：張家麟博士

語言：廣東話

簡介：「博奕論」又稱「對策論」，是研究如何在互動的競爭過程中，尋找最優決策的現代數學分支。它的應用既深且廣，遍及現代的經濟、政治、管理，以至社會的各個層面。透過這次講座，我們將以生動淺白的語言，有趣易懂的例子，把博奕論中如「納殊平衡」(Nash Equilibrium) 影響深遠的概念，為你娓娓道來。

各位校友及數學系的友好：

看到同學、校友的近況，會否鈎起你許許多多的中大回憶？我們希望通過這份「簡訊」，增進與各位的溝通，並加強與各位的聯繫。歡迎你們在以下網頁：http://www.math.cuhk.edu.hk/alumni留下個人資料及通訊方法，以保持聯絡。

如有意捐助，請將填妥的捐款表格連同劃線支票一併寄還中文大學數學系。

這份簡訊，歡迎索取。如有需要，請通過以下的電郵：newsletter@math.cuhk.edu.hk告之我們有關詳情。謝謝！

Kung Fu Ng
Department of Mathematics
The Chinese University of Hong Kong
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