Foreword by the Chairman

From previous issues of the Newsletter, you might already have a glimpse of our summer exchange programme. In the recent exercise of the Undergraduate Curriculum Review, the Department has been highly rated by the University, and one of the most praised aspects was this out-reach activity.

We started the summer programme at the turn of the millennium, with the aim of broadening students' horizon and equipping them with research skills, through working abroad with designated professors on special projects. Our "Research Experience for Undergraduates" began with two students visiting Cornell, and over the years we have expanded our exchange network considerably. Nowadays we are able to arrange most of our research-oriented students to various prestigious research institutes (Cornell, Caltech, Cambridge, ETH (Switzerland), to name a few). With a more recent turn of developments, our colleagues also supervised some students from abroad in return.

Summer activities are not just restricted to research; we are well aware that a majority of our students will choose a more practical career path after graduation, and it is essential for them to be ready for the real world. We have paid much effort to place them in education institutes as well as local and overseas companies. After participating in research and internship programmes, our students demonstrated remarkable personal growth. The programmes enriched them with real-life experience and, more importantly, a refreshed drive and enthusiasm towards contributing to the community through their fields of interests. As educators, we are very proud to see students becoming more mature in mind, behaviour and attitude.

The Department is not alone in nurturing these future leaders of the society. In fact, many organizations, alumni and friends have been playing a vital role in helping us through their providence of internship and work opportunities. We are truly grateful for their helping hands, and we are still looking forward to leading more of our students into various sectors where they could demonstrate their capabilities. We deeply appreciate every occasion your corporation could provide for preparing our students to become true contributors to the community.

As for staff matters, we are in a transition period. After Professor Ng, Professor Tam Luen-Fai has recently retired from his teaching post. Professor Tam is one of our most prominent teachers; he has contributed to the Department in profound extents, inspiring countless students through his outstanding lectures and rigorous expositions. I am glad that he will stay with us and continue to lead our research. For recruitments, we have successfully attracted some excellent new faculty members; their positive impact on our quality education will be seen in the near future. Last but not least, I am pleased to announce the news that Professor Wei Jun-Cheng has the honour to be ranked 7th among the world's most frequently cited mathematicians in the decade. Congratulations to Jun-Cheng.

Ka-Sing LAU

目錄

「恒隆數學獎」榮登國際雜誌

「恒隆數學獎」自2004年創辦以來，已於2006年12月頒發了第二次的獎項。過去一年，各中學都在密鑼緊鼓，為2008年度的比賽努力。有些在組隊或找題目；有些在閱讀材料；相信不少隊伍已進入了研究階段，冀能找到新穎而又深刻的數學結果。經過了兩屆比賽，這個項目開始顯露成果「恒隆數學獎」漸漸在國際數學界為人所知曉。… *[第十頁續]*

譚聯輝教授
——我的前輩、合作者及同事

溫有恒

第一次聽到譚聯輝教授的名字是在1986年。當時我剛到美國加州大學聖地牙哥分校攻讀博士課程。還記得某天在電梯內碰見丘成桐教授，談到有兩位中大的畢業生要回中大教書，丘教授問我是否認得他們。當時不知，現在當然知道就是譚聯輝教授及曹啟昇教授!

但我第一次真正認識譚聯輝教授是在1988至89年之間。當時，譚聯輝教授剛與李偉光教授得到非緊空間上調和映射存在性的突破性工作，並應我論文導師孫理察教授的邀請到史丹福大學講述他們的工作。我就是在討論班上第一次見到譚聯輝教授。

譚聯輝教授是第一流的數學家。不單數學技巧高超，而且眼光獨到，選擇的題目都是在主流中有極高難度的問題。他的演講技巧也是第一流的。這不單在他準確、細緻而不沈悶的演講中表露無遺，也從他得到大學生們的高度評價而得以印證。

對我來說，譚聯輝教授更是重要的前輩、合作者及同事。由於我們工作於同一領域，在過去的十多年間，我們有多項合作，發表了多篇文章。在這十多年的合作期間，我從譚聯輝教授身上學到了許多東西。在數學上，我學到了許多分析上的技巧。在工作態度上，我學到了甚麼才是專心一致、堅毅努力。在做人方面，我學到了如何才是真正的謙虛、節儉和克己。

譚聯輝教授是第一流的數學家！這不單是我的意見。我還親耳聽到多位著名數學家給出同樣的意見。其中包括丘成桐教授、李偉光教授及他的論文導師R. Finn教授（史丹福大學）。他的工作涵蓋幾何分析中多個重要領域，包括上文提到的非緊空間上調和映射；早年的毛細管中液體表面形狀的理論；和近年在Ricci流和廣義相對論的工作。每一項都是重要而具影響力的。在我參加過的重要學術會議中，不時都有學者們引用他的工作。到現在還是如此：就在我寫這文章前三天，在日本的一個國際會議上，一位來自英國華威大學(Warwick University)的教授就報告了一個建基於譚聯輝教授與李偉光教授的理論而得到的數學結果。由此可見，譚聯輝教授在數學上的貢獻可謂無可置疑。

譚聯輝教授是出了名不喜歡應酬的！不單同事們，連很多訪問學人都知道他的原則。大家都了解到他是那種百分之百投入工作的人，絕不願意多花時間在吃飯聊天上。與他合作時，你會發現他的工作效率奇高。很多時在系內討論中，我們會得到一些可能解決問題的想法而相約回家後各自仔細思考。到了翌日早上，你不單發現問題已被解決，而且還用電腦打出了頗詳細的初稿。我後來從他太太處得知，他是連吃飯也在思考數學的。這種專心一致的工作態度，絕對是後輩們的好榜樣。

大家可能不知道，譚聯輝教授在大學畢業後的一段長時間，放棄高薪厚職，利用他最青春的日子，全身投入社會服務之中，與他太太並肩為社會上的弱勢社群爭取權益。這種無私地為社會公義，為大眾利益而貢獻的精神，最是難能可貴。

而更是難能可貴的是他在離開數學十載，以三十來歲之齡回到數學裡，做出如許出色的貢獻。大家都明白，數學是一門極尖端而抽象的學問。那怕離開只一年半載，大部份的數學都會被忘記得一干二淨。離開十年而還能得到如此成就，譚聯輝教授是我所知的唯一一人。而這正反映了他驚人的決心和毅力。若再考慮到當年出國的各種經濟和生活上的困難，他那勇往直前的決心，就更值得今天為出國而猶豫不決的後輩們所學習。

譚聯輝教授生活樸素，絕不浪費。他律己甚嚴，但待人以寬。在史丹福的時候，他就曾親自種植蔬菜，以減低不必要的花費。就我所見，他身體力行，比許多宣揚環保的知名人士更具環保意識。與我合辦學術會議，每每堅持最低限度的支出，絕不會把資源花費在無謂的宣傳裝飾上。外人看來或不起眼，但正因如此，來參加的學者可避免無謂應酬而得到最大的學術交流空間。

譚聯輝教授是一位十分謙虛而低調的學者。他從不吹噓自己的研究成果，也絕不爭名奪利。大概基於對中大和香港的感情，他在96年左右接受了一個低於他水平的位置而再次回到中大來。許多同行都為他不值，每當見面時都問到他是否已得回應有的待遇。但譚聯輝教授卻無怨無悔地一直為中大服務。從不爭取、從不抗議。對比多年前他全力地為弱勢社群謀求福祉，更顯他偉大的情操。

作為後學，能有機會與譚聯輝教授共事合作，我是感到幸運的。我個人是極之不願見到他離開數學系。幸好他答應在今年退休後留在數學科學研究所繼續研究工作，並願意開一門課。這絕對是數學系各師生的福氣。以譚聯輝教授做人的原則，他是絕不會同意我們為他作任何形式的退休慶會。因此當系主任劉家成教授與我提出撰寫這文章時，我毫不猶疑，馬上答應。事實上滿心歡喜！因我希望以此文章表示我對譚聯輝教授的最大敬意和謝意，並祝他退休後生活愉快，身體健康，研究順利。

記吳恭孚教授榮休晚宴

梁子威

吳恭孚老師在數學系任教近四十載，本系於二零零六年十二月十五日晚假沙田美心酒樓為吳老師設榮休晚宴，當晚宴會除了本系老師及同事出席外，更難得有很多由六十年代畢業至近年畢業的校友出席參與。延開共十二席，可謂是創系以來最大的聚會。扣除當晚酒席開支，餘款約二萬元，已撥入吳恭孚教育基金；除此之外更獲得李思廉、劉迪炮及曹啓昇校友的慷慨捐贈給吳恭孚教育基金。在此謹代表數學系對各校友的捐贈致謝。最後在此謹祝吳老師及其家人生活愉快、身體健康！
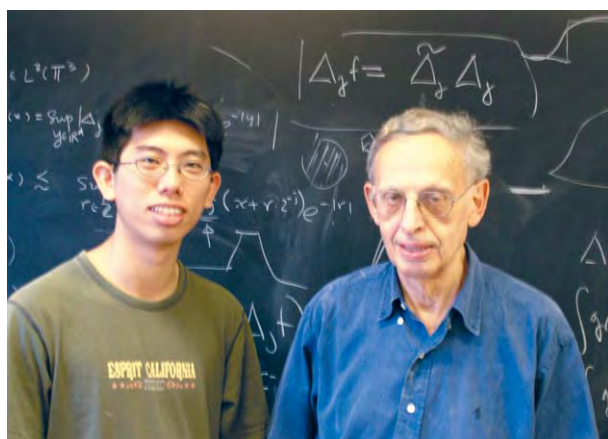
吳恭孚老師致送紀念品與李思廉校友 ▶

▼ 桃李滿門：吳恭孚老師與各年舊生留影

回望所來徑
勉力登高峰

楊葆霖

楊葆霖於2000至2005年在中大數學系修讀學士及碩士課程，同時與友人創辦數學網站「數學資料庫」（http://www.mathdb.org，其中現有網誌 http://mathdb.blogspot.com），積極向香港中學生推廣數學文化。畢業後到普林斯頓大學深造，現時研究範疇為調和分析（harmonic analysis）。

不經不覺，我踏上數學之路已經七年。中大數學系是我數學生涯的起點。在這裏，我首次接觸到現代的數學，認識了一班志同道合的朋友，也為日後進修數學打好了基礎。

記得剛進入中大數學系時，心裏總是戰戰兢兢的。由於自己中學時對課本以外的數學涉獵不多，眼見身邊的不少同學都閱歷甚豐，有好幾位還代表過香港參加國際數學奧林匹克比賽，我也曾擔心過自己是否應付得來。其實那時候唸數學並不算很專心；大學裏可以學的東西太多了，所以我選了很多其他學系的課希望充實一下自己。事後看來這還是很好的決定，畢竟唸大學是發掘自己興趣的好時機。當然，我還是在數學系上了許多好的課。當時聽說吳恭孚教授的課不容錯過，而且他快要退休了，所以我們一年級的幾位同學便硬著頭皮去聽他的實分析。這是對我影響很深的一門課，從中我領會到數學分析的美，也間接促成我後來以分析作為研究的方向。

楊葆霖與其老師 Professor Elias Stein

大學二年級的暑假，在系主任劉家成教授的引薦下，我和系裏另一位朋友黃俊偉到了 Cornell University 參與了一個暑期研究計劃。這是我數學生涯的轉捩點：以往雖然也會在課餘時想想數學問題，可是真正有系統地參與前沿的數學研究，這還是第一次。那年仲夏，在Prof. Bob Strichartz的指導下，我漸漸掌握到做研究的方法；他才思之敏捷、觀察之入微，都使我獲益不淺。那種日以繼夜、專心致志想問題的經驗，對我更是很好的鍛鍊。在計劃結束前，Cornell數學系舉辦了一個升學講座，席間Bob鼓勵我們要到美國唸研究院，從那時候開始，我便定下決心，將來要到這新鮮的國度闖一闖。

升上碩士班以後，我有更多機會接觸不同領域的數學，眼光慢慢闊了起來。我的導師劉家成教授鼓勵我多選修不同的課，即使跟自己的研究沒關係的也要多學一點；這於我受用無窮。

畢業後我幸運地得以到美國繼續升學，師承Prof. Elias Stein。他對問題具前瞻性的理解、治學之認真都成為了我的典範。這裏確實是追尋夢想的好地方：每天都有很多很好的課，講的都是教授最有心得的研究範疇，而且班裏學生不多，同學都有很多機會發問及參與討論。這裏的同學也都出類拔萃，博學多才，學組合的同學可能懂得很多數論，學分析的也可能很懂拓樸和幾何。單是跟同學閒聊，已經獲益良多。他們有不少更才藝雙全，有小提琴演奏能手，有各種體育的健將，棋類橋牌高手更多不勝數。這裏的同學都很勤奮，早上九時回到學校，晚上一時才回宿舍的大有人在，連周末晚上也有同學自發組織討論班。在這樣的氣氛下，大家學習得快也進步得快。這裏研討會前還會安排講者先用淺白的語言在 "Lunch Seminar" 對研究生介紹一下他們的研究，也會定期安排一些名為 "What's happening in Fine Hall?" 的研討會，由這裏的教授向同學講解自己最近的研究，對同學拓闊眼界甚有幫助。

現在的我，已由當年中大數學系中莘莘學子的一分子，逐漸蛻變為思想獨立的研究生。今天可以做自己喜歡的研究，有能力應付其中的困難，當年在中大繫下的數學根基可是幫忙不少，各教導有方的良師更是功不可沒。研究固然會有不順利的時候，這時候我自然要專心致志設法解決問題；然而我有朋友說其實在研究順利時更需要加倍努力，不可掉以輕心，這訓勉我一直放在心上。

在這裏我鼓勵有興趣到外國升學的同學，多從不同的層面提升自己的能力，保持自己的好奇心，多探索、堅持和專注，好好準備自己。也讓我在這裏感謝一直支持我的人，以及我數學路上的各位良師益友。

Research Exchange for Undergraduates

蔡潤培、馬喆、
*Professor John Coates*及
訪問學人 *Professor Tian*

CAMBRIDGE UNIVERSITY
Ma Chit, Tsoi Wun Pui

自從當天步出香港機場至今，剛剛好是整整一個月的時間。現在回想起來，影像開始模糊，不過感覺依然，要說是夢幻也的確十分夢幻，夢幻中也夾雜了緬懷之情。

劍橋是一個離倫敦一小時的小城。大學的建築物分散在各地，到今天也還沒弄清到底是城市中的大學還是大學中的城市。這大學小鎮亦是一個充滿悠閒氣息的地方；當然也因為如此，是一個作學術工作的理想地。來到這裡，更能享受到學術的樂趣。也有種種不同的文化，總覺得既熟識又新奇。

初次和 Prof. Coates 見面，已經感到他十分親切，他為我們做了周全的準備。只是我們萬萬也想不到，他會親自指導我們，更會一個星期有二到三次。受寵若驚，大概就是這個解釋了吧。能夠跟 Prof. Coates 學習，看到了萬千世界，種種不解的美麗，也感受到大師的觀念，而且往往都覺得他比我們更清楚我們的所需和不解。

另一方面，Prof. Coates 其實是一位十分友善的人。在階級觀如此重的大英帝國，實在是十分可貴。和他相處的時候，往往會不自覺的忘卻他是這樣一位大人物。記得有一次他邀請我們去他的家共進晚餐，還有他的一眾學生。坐在客廳中閒聊時，總會有一種閒話家常的感覺。臨走前的一天，他更送上了我們意想不到的禮物。是當年Wiles 解決費馬大定理時讀過的兩本書。價值不輕，但情意更重。當中的那份期盼，總覺得自己未能好好的回應。當我們都不知如何地多謝他時，他卻說最好的謝禮就是成為出色的數學家。
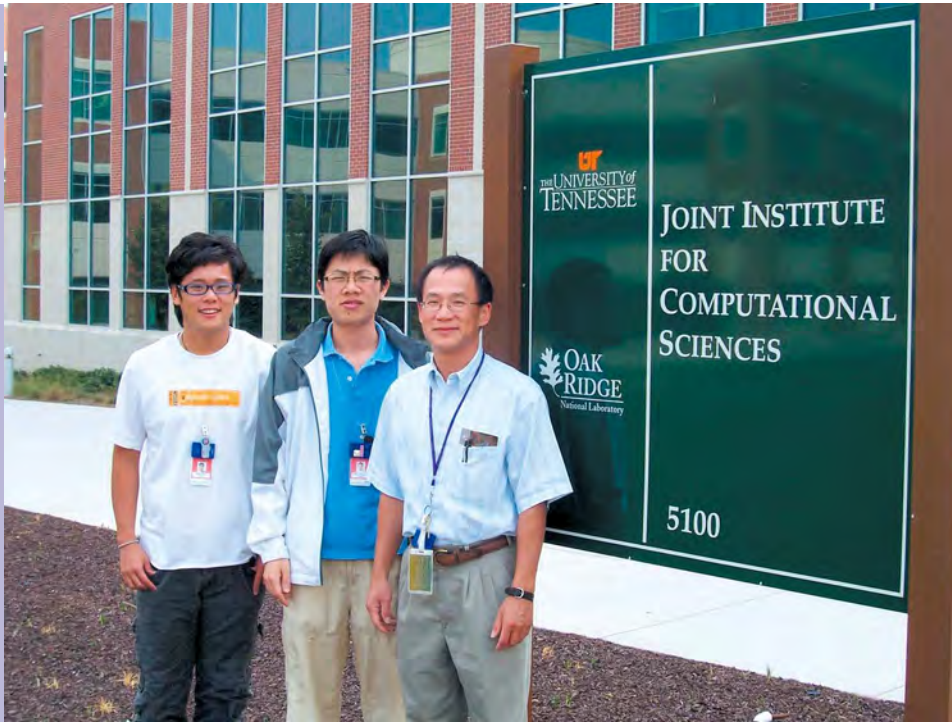
五十天的時間，感覺才剛剛開始，就已經要結束了。既對英倫不捨，也十分懷念香港的種種，帶著矛盾夾雜的心情，離開了劍橋。那份摯誠的謝意，也只能埋於心底，轉化成動力，繼續向那無限遠的目標前進。回到香港，也希望把那對學術的享受帶回來，不要忘記那可愛的心境。

後記：這次的成行，當然要多謝數學系的支持，還有就是幫忙穿針引線的 Prof. Au。■

OAK RIDGE NATIONAL LABORATORY

郭永鴻 及 陳寬在

郭永鴻、
陳寬在及
黃桂林博士

零零七年六月二十三日，我們懷著興奮的心情到達美國田納西洲(Tennessee) 的 McGhee Tyson Airport。合共二十小時的機程，實在令人透不過氣，直至下機的一剎那，才如釋重負。負責安排這次旅程的黃桂林博士(Dr. Kwai Wong)和兒子親自來迎接我們，並邀請我們到他家裡作客吃一頓晚飯，感覺十分親切。

休息過兩天，我們開始於橡樹嶺國家實驗室(Oak Ridge National Laboratory，縮寫為ORNL)的暑期實習。ORNL 主要的工作是研究能源，但亦有如數學和電腦科學等的研究，而全世界第二最快的電腦亦於ORNL。

我們是次學習的，是流體力學和並行計算。而要解決這類問題時，就要有其他相關的知識。例如我們用電腦計算時，就要懂得用C、LINUX、MPI和VI等程式或語言。另外，我們亦要有數學的根基，因為在計算時，要運用到一些應用數學和數值方法的知識。在是次實習前，很多相關的知識我們還未學會，有些則略懂皮毛。所以，在這次實習的前半部份，黃桂林博士用心地教導我們，令我們更清楚明白這些知識，令我們更易明白流體力學計算和並行計算當中的原理。而實習的後半部份，我們就開始接觸一些實際的問題，如二維空間的Landau-Lifshitz-Gilbert equation，最後亦成功做到實驗預期的結果。

這次旅程不但令我們學會很多學術上的知識，亦能令我們有一次大開眼界的機會。例如，田納西大學是一間很古老及面積非常大的州立大學，比中文大學還要大；在諾斯維這個城市中，由於地大人少，我們很少見到路上有行人，只有私家車。除此之外，與其他國家的學生交流，得以了解不同地方的文化，亦增加了運用英語的信心。

我們希望在此多謝中文大學數學系給了我們這寶貴的機會，以及黃桂林博士給予我們的照顧及教導。■

CALIFORNIA INSTITUTE OF TECHNOLOGY
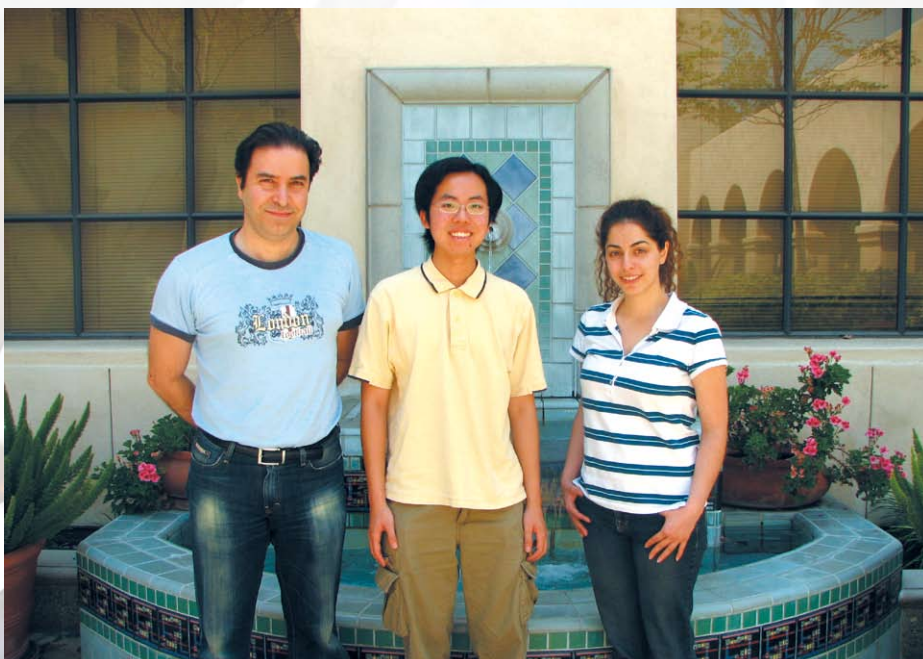
David Fong Chin Lung

In the summer of 2007, I had the privilege to visit the California Institute of Technology in Pasadena, Los Angeles. I was honoured to work under Prof. Babak Hassibi's guidance in the Electrical Engineering Department on problems in network information theory. It was an unforgettable and rewarding experience.

I worked in Moore Laboratory, a research facility of the Electrical Engineering Department named after Gordon Moore, the co-founder of Intel. Under the supervision of Prof. Hassibi and Sormeh Shadbakht, my co-mentor, I studied the properties of entropy vectors for network information theory. The problem has fascinated some of the brightest minds in the field of information theory. It is yet an open conundrum for the time being, possibly one of the holy grail in this field. Even though our progress in a short period of 10 weeks is not as significant as we wish, we managed to get a slightly better understanding by proposing a simple construction to understand the results for low dimensional cases.
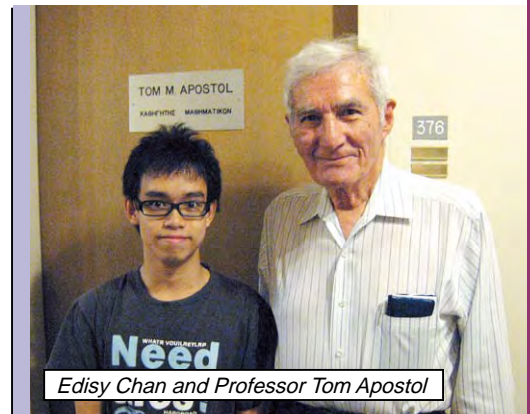
The most memorable part of my summer is the underground steam tunnel adventure. Led by a privately organized cabal of Caltech undergrads, we started our journey at a Friday mid-night. The tour began in the underground of the Sloan Laboratory of Mathematics and Physics. We then visited the underground portion of various areas of the Caltech campus. From the basement of different dormitory, to the secret entrance of clandestine laboratories, we were amazed by the creativity of Caltech students to utilize such a hidden maze. We even experience the thrill and terror to walk in some tunnels of complete darkness.

In a nutshell, the Summer Undergraduate Research Fellowship (SURF) in Caltech is a highly recommendable programme. I really wish that time could freeze and I can continue to enjoy the sunshine of California! ∎

Edisy Chan and Professor Tom Apostol

Edisy Chan Kin Wai

Starting in June, I underwent intensive learning on commutative algebra, algebraic geometry, elliptic and algebraic curves. Thanks to helpful discussions with my mentor, Dr. Eric Wambach, I was able to pick up various concepts quickly and to tackle problems in my project. My mentor found Chris, a Caltech graduate, to help me as well. Through the enjoyable conversations with Dr. Wambach and Chris, I acquired new perspectives and understood intricate concepts in a much more efficient manner than any textbook could offer.

One nice surprise from the program is having a chance to meet at Caltech one of my idols – Prof. Tom M. Apostol, a world-renowned analytic number theorist. He even signed an autograph on one of my favorite books, his "An Introduction to Analytic Number Theory"!

On top of these, the most impressive moment at Caltech would definitely be that my foreign friends arranged a surprise birthday celebration for me during our lunch in a Japanese restaurant. It was really touching; being my first birthday party in life, it would definitely be a memorable occasion.

I deeply appreciate Dr. Wambach's patience and Chris' useful advice. Besides, I have to give my special thanks to the Caltech Alumni Association (Hong Kong Chapter) for her generous support. I would also like to offer my heartfelt thanks to Prof. Chou, Prof. Zou and Prof. Wang for being my referees, to Prof. Lau and Prof. Au for their tremendous help. ∎

Professor Babak Hassibi, David Fong and co-mentor Ms.Sormeh Shadbakht

CORNELL UNIVERSITY

NG Kwong Wing

In summer, Tony Wong, Shu-Tong Tse and I had the privilege to take part in the Research Experiences for Undergraduates (REU) Program organized by the Department of Mathematics of Cornell University. Shu-tong and I worked under the supervision of Professor Robert Strichartz on the project "Analysis on Fractals", whereas Tony worked under the guidance of Professor Todd Kemp on the project "Free Probability". One of the goals of the project "Analysis on Fractals" was to obtain more information about the solutions to a class of fractal differential equations, following up on the work that had been done in the past 11 summers by REU participants. Most of the work on this project involved both computer experimentation and theoretical study.

We work under the guidance of Professor Strichartz. An erudite and well-informed scholar, Professor Strichartz is a truly inspiring mathematician. More than just an analyst, he always displays great interest and profound knowledge in other fields of Mathematics. He often came up with creative ideas which ultimately led us to fruitful outcomes. As our supervisor, he met with us every morning patiently to follow up our progress and discuss with us difficulties that we encountered. I have really learnt a lot from him. ■

TSE Shu Tong

Apart from meetings in the morning, we also attended seminars on Mondays and Wednesdays and 'jam sessions' on Fridays. The seminars were given on a great variety of topics, such as wavelets, mathematical biology and elliptic curves. They introduced me to various fields in mathematical research and deepened my interest in them. 'Jam sessions' were presentations by fellow students in the REU program. It was one of the most important channels via which we learned what each other was working on. I also treasure very much this opportunity of delivering presentation on my research work.

[From left to right] Tse Shu-Tong, Tony Wong and Ng Kwong Wing

The fun in Cornell came not only from research. Thanks to the graduate students' effort, picnics, hiking, movies and game sessions were organized for us. Such cultural experience is unforgettable. One afternoon, I went out with two students for swimming in a nearby river. To my astonishment, they jumped down from a rock more than 10 meters above the water. Encouraged by them, I did follow and dive in from such a height, to my surprise when I think back. ■

Tony WONG Wing Hong

Exciting and fruitful are the two best words for describing my summer research experience in Cornell University. Thanks to the Mathematics Department for this golden opportunity, I spent eight weeks in Cornell, working under the supervision of Dr. Todd Kemp from Massachusetts Institute of Technology on free probability, the study of probability on free groups. Research is never a simple task. At times, we met problems that could not be easily solved, but we were never deterred by any difficulties. During the eight weeks, we kept the morale and finally obtain tremendous success with a number of surprising results.

Apart from research, we have presentations and seminars every week. By attending the weekly seminars, I was further exposed to various disciplines in mathematics. I still remember how enlightened I felt by the presentation of one of the speakers, Prof. Ravi Ramakrishna. I saw his eyes shine with enthusiasm, which truly ignited my passion towards front-line mathematics research.

In fact, fruitfulness is not only limited to academic aspects. Cornell has a nice campus, with a beautiful river and magnificent waterfall to separate it into northern and southern parts. I have gained precious friendships with students in the US as well as deepened my understanding with Shu-Tong Tse and Kwong-Wing Ng. We chatted for hours at night, discussing mathematics and sharing our thoughts. All these form my sweetest memories for this summer.

Last but not least, all three of us would like to express our sincere gratitude to Prof. Strichartz and Dr. Kemn for their guidance, our CUHK math alumni for generously supporting this trip and to Prof. Lau Ka Sing for making all this possible. ■
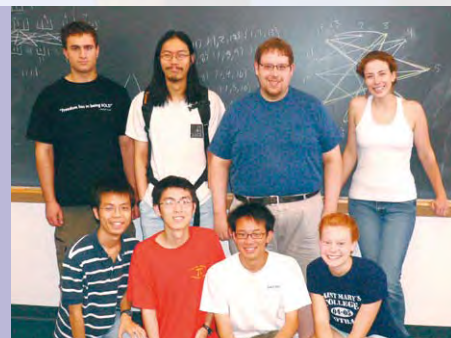
Tony Wong (lower right hand side) and friends from MIT

全國數學第十二屆研究生暑期學校

麥健熙、唐本懷、謝宏洪、許俊彥、盧智宇、堯偉

今年暑假，我們參加了由中國國家教育部、國家自然科學基金委及武漢大學主辦的全國數學第十二屆研究生暑期學校。課程分三大範疇：偏微分方程、複幾何及概率論。每個範疇有兩至三個課程，及一系列的前沿講座，每個講座均內容充實，其中一些更足以獨立開一個課程。

我們六人分別選修了偏微分方程及複幾何之課程。偏微分方程課程包括徐超江教授的偏微分方程基礎及楊彤教授的"An Introduction to Hyperbolic Conservation Laws"；課程中較令人深刻的是調和分析如何在解決PDE問題時展現它的威力。複幾何方面，有莫毅明教授的複幾何和黃孝軍教授的多複變函數論課程。複幾何課的主線在於如何構造緊複流形上的全純或亞純截面從而將該流形嵌入投影空間，內容包括用L2方法證明Kodaira Vanishing Theorem。多複變課程主要教授了高維複空間裏一些特別的區域，用L2方法證明瞭這些區域的等價性 (Levi problem)，Weierstrass Preparation Theorem等。

除了主要課程外，我們還參與多個前沿報告，獲邀講者包括知名的教授，如哈佛大學的蕭蔭堂教授及麻省理工的田剛教授。報告內容圍繞著我們的主題課程，介紹現今這三方面的發展及探討一些主要問題，其中蕭蔭堂介紹了Ideal Operator在偏微分及代數幾何的應用，及如何以代數幾何方法找出偏微分方程的解。這些演講不但啟發我們以新角度對待偏微分及複分析，更讓我們窺探數學與物理的緊密關係——好些報告談及的偏微分方程都是由量子力學及相對論引起，內容有趣之餘，更引發我們對數學應用的深思。

由於課程緊密，能夠去武漢周圍遊覽的時間有限；甚至於武漢大學這個優美而龐大的校園，我們亦只踏足於工學部以及數學系，實是今次暑假的一個遺憾。幸而百忙之中仍能抽空一天，遊覽武漢。武漢名勝

堯偉[中]及其武漢朋友

之最莫過於黃鶴樓。黃鶴樓立於武昌區之巔；登上樓頂，即飽覽長江，更盡收武漢全景，實不愧其「天下第一樓」之美譽！

晚間到武漢中央之洪山綠化廣場一遊。廣場四周有燈光璀璨的高樓大廈，有十綫行車的大路，更有音樂噴泉表演，感覺有如身置尖東。此般景緻實是使人驚歎祖國發展的速度。旅程以坐渡輪橫過長江作結；雖然景色已成漆黑一片，無法欣賞，但身為中國人，能夠在一生中橫渡長江，已經心滿意足了。

武漢一行令人難忘的除了數學以外，還有

許多一起「做數」的片段。同一個宿舍中有從上海交通大學、北京師範大學和蘇州大學來的研究生。還記得當學習20世紀PDE研究的調和分析基礎時，那些艱澀的題目若不是大家一起討論，自己一個做是比較難解決的。

武漢大學招待我們的同學也很熱情，他們為我們安排了一些聯誼活動，讓我們很少「開金口」的同學都拿起麥克風獻唱一曲；平時不打籃球的也都上場獻醜，而且雖然輸了，我們卻有意外的收穫：不是紀念品，而是友誼。■

[由左至右] 盧智宇，唐本懷，許俊彥，麥健熙，謝宏洪

口碑與「呈堂證供」：
課程檢討的苦與樂小記一則　　吳恭孚

為教與學之發展，大學教務會在2005和2006年分批委派課程檢討小組專訪檢視本科教學單位，評估教與學之架構和效果。數學系是去年受檢之三個學系之一，檢討範圍既深且廣。雖然數學系有很好的口碑，檢查之本有若法庭：「呈堂」的均需要證據，全系動員實因準備工作委實不少，包括歷年為有志深造的同學及早打好基礎、安排利用假期前往海外研究機構或大專院校開展研究之事前準備、事後總結、對方教授的反應的種種書信往來以及出版記錄，亦包括專為有意在畢業後就業的同學而設的各種培訓班，平日的訓練和模擬面試的各種詳情亦是專訪小組極感興趣的課題。他們高興注意到我們的校友，尤指近期畢業生的成就和感受。這些校友包括各行各業，既有從事學術研究或中小學教育的，亦有在工商界工作的，甚至有開設數學專科補習學校，或在快餐連鎖店，物流行業任職的。雖然來自不同的崗位，但給專訪小組的印象卻十分一致，數學訓練對學術和實用皆宜也。

繁重的工作中亦有輕鬆和愉快的一面，畢業同學的來鴻均多珍而藏之，所受捐款記錄更是一絲不苟，故專訪小組所要的文字記載均可「超額」完成，每年的簡訊內容亦是師生和校友合作無間、恍如一個大家庭的佐證。難怪，本年初大學在經過整整一年的評估程序後，給了數學系最高的評級並決定在今後三年增加撥款2%以資鼓勵云云。

「恒隆數學獎」榮登國際雜誌

[…續首頁] 兩屆的學術委員中，共有近二十位國際知名的數學家，連同一眾評閱論文的教授，就有不少人看過參賽的作品。另外，也多得MIT 的 Gilbert Strang 教授，特意在 Society for Industrial and Applied Mathematics (SIAM) 刊物撰文推介「恒隆數學獎」給全美國數學界，使我們的工作和香港學生的優秀表現，在國際上得以推廣。在這鼓舞下，我們將再接再厲，維持高水平的要求。深信假以時日，「恒隆數學獎」的得獎學生，會成為各地大學競逐的對象。

兩屆的得獎學生，亦在其學術發展上獲益不小。2004年度的金獎得主，已在本系完成大學學位，升上研究院，向更高的數學殿堂進發。另外兩位得獎學生，在本系的安排下，剛完成為期兩個月的劍橋大學暑期研習，在名教授John Coates的緊密督導下，與博士生一同學習高水平的代數數論與代數幾何。他們的努力亦深為教授所欣賞，前途無可限量。以下節錄自 Strang 教授在SIAM上的原文:

Hong Kong Students Rise To Wide-Open Math Challenge

"…the true question is whether a competition like this could succeed in the schools near you. You won't have Ronnie Chan, the CEO of Hang Lung Properties, to provide generous support and such an astonishing spark. (He emphasizes that the idea for the competition came from his friendship and conversations with S.T. Yau.) But you do have students and teachers, perhaps ready to test themselves on a wide-open challenge. The students do the work, write up their best efforts, and deal with tough questions from the judges---and grow visibly from the experience."

[From article of the same title, SIAM News: Vol. 40(2), March 2007]

Congratulations!
programme enters its

We started a double degree programme on Mathematics and Information Engineering (MIE) in the year 2006/2007 with the Information Engineering Department. This was the first double-degree programme ever in CUHK. The programme targets at students who love mathematics and at the same time desire a professional degree or a research career in more applied areas. The response to the programme is very enthusiastic. We have admitted many outstanding students in the first two-years' admission exercises, including some of the six-formers through the Early Admission Programme. Indeed the entering GPA is in the same range as the Mathematics majors, and is the best among the engineering departments. The programme is especially popular for students from Mainland, and we wish to increase the quota in foreseeable future.

It is widely known that engineers and mathematicians think and work quite differently. One may wonder how these two groups of people can work together to set up a joint programme? Actually this is nothing unnatural if you realize that many IE professors use Fourier analysis, stochastic processes and linear algebra daily. The founding director of the MIE programme, Prof. Bob Li, is an engineering professor who has received degrees only in pure mathematics. Last year Prof. Elwyn Berlekamp, Bob Li's PhD supervisor at UC Berkeley, visited CUHK. He said, "Among the 70 math professors at Berkeley, only I never received any math degree." Someone then told him, "The first tenured Professor of any Engineering at CUHK never received any engineering degree." Berlekamp responded, "I certainly know who that is."

The programme integrates mathematical and engineering

The MIE double-degree second year.

Professor Bob Li and Professor Elwyn Berlekamp meeting MIE students

education and aims at equipping engineers with stronger mathematical background as well as mathematicians with engineering know-how. The set-up of the MIE programme was motivated by the common views from Math and IE colleagues towards mathematical and engineering education, also partially by Prof. Li's personal experience. Prof. Li was one of the founders of network coding theory and led the research team to win the 2005 IEEE Information Theory Society Paper Award, the first winning by Asian researchers in more than 3 decades. For that, he became the featured scientist of the Chinese edition of Scientific American in the July 2007 issue.

In comparison with regular single-degree programmes, the awarding of two different degrees within 4 years appeals to prospective students and their parents, but this sometimes also raises doubt in their mind—does the double-degree programme offer weaker mathematical training than the Math Programme and less engineering training than the IE Programme? The answer is a definite NO. The curriculum and the study scheme have been carefully designed after numerous meetings of both departments to fit in all the required courses, and eliminate the overlapped courses such as computer labs, probability, coding and cryptography. No doubt, the programme load is quite challenging to students; nevertheless so far MIE students have shown their determination to meet the challenge. Most of them have performed truly well academically and, in fact, better than what the programme administrators expected. On top of the academic challenges, some of the students can still afford the time to participate actively in students associations and other extracurricular events. In view of this, we are confident to say that this programme will be a success, and be able to nurture graduates well-equipped with strong mathematical mastery which could lead them to remarkable achievements in IE, or the other way round.

EpymT

數學英才精進課程
新 路 向

區國強

「數學英才精進課程」經過了四年多的歷史，培育了不少優秀的學生，亦經歷了幾番的轉變。

今年的特點是課程有學員能提早升讀大學。我們三位中五及中六的學員，能提早考取超出會考的公開試資格，並由於他們額外傑出的數學表現，獲得大學取錄。這樣的學生雖然只是寥寥可數，但已顯出我們的課程實在能讓優秀的學生盡早提昇。

第一屆的學員，都已經大學畢業，進入各行各業。有志於數學發展的，除了一批往英美上大學的，留港的大多在本系畢業並升學深造。有幾位分別在史丹福、康奈爾和明尼蘇達進修博士，亦有些留在本地深造碩士。課程亦曾培訓了一批本地或外地的大學生作助教，其中一位已在哈佛取得博士學位，現於柏克萊任教，另外幾位仍在普林斯頓、加州理工、牛津等著名學府研讀。課程的前學員及助教，正在深造數學的就不下二十人。

幾年來，香港中學的環境亦改變了不少。中學的內容更淺易了；課外活動又增多了，而且中學生暑期遊學亦頻密了。於是，有充足時間來參予課程又有足夠能力掌握課程內容的中學生越來越少，我們的課程亦因此要尋找合適的內容和模式來面對這新環境。去年嘗試過小組專題式的教學，結果好壞參半。但我們仍會繼續探索，保持這個讓優秀學生超越環境及自我的空間，為香港培育科研人才盡力。

Personalia

Appointments. We have three new colleagues this year, Prof. Jiaping Wang, Dr. Charles C.C. Li, and Dr. Jeff C.F. Wong.

Professor 1

Prof. Jiaping Wang (Ph.D., UC Irvine, 1994) works in differential geometry and partial differential equations.

Instructor

Dr. Charles C.C. Li (Ph.D., UCLA, 2001) works in number theory and representation theory of automorphic forms.

Instructor

Dr. Jeff C.F. Wong (Ph.D., CUHK, 2004) works in computational fluid dynamics and mathematical biology.

Coming events

International Conference on Abstract Harmonic Analysis Hong Kong 2007

Organized by Prof. Chi-Wai LEUNG

Date : December 17 – 21, 2007

For details, please visit

http://www.math.cuhk.edu.hk/conference/AHA2007/index.html

New Wave Mathematics

Speaker : Prof. Conan LEUNG

Title : Superstring theory and Yau manifolds

超弦理論及丘空間

Date : February 2, 2008 (Sat)

Time : 10:30AM

Venue : Shaw College Theatre

Visitors

Every year, the Department and The Institute of Mathematical Sciences receive numerous visiting scholars from all over the world, participating in our seminars and occasionally providing courses. Listed here are some of our visitors in 2006-07. This list is by no means exhaustive; but we hope to acknowledge in this occasion all our visitors for their contributions through active participation and providence of expertise in our events and courses.

Viorel BARBU, *Romanian Academy*
Tony CHAN, *University of California, Los Angeles*
Hua CHEN, *Wuhan University*
Patrick CIARLET, *National Institute of Advanced Technology*
John COATES, *Cambridge University*
Xinhan DONG, *Hunan Normal University*
Jürgen EICHHORN, *Universität Greifswald*
Aihua FAN, *Université de Picardie Jules Verne*
Gene GOLUB, *Stanford University*
Changfeng GUI, *University of Conneticut*
Boling GUO, *Chinese Academy of Sciences*
Kazufumi ITO, *North Carolina State University*
Jean Pierre KAHANE, *Université Paris-Sud Orsay*
Karoly SIMON, *Technical University of Budapest*
Ying Chuen KWONG, *Northern Illinois University*
Chun-Kong LAW, *National Sun Yat-Sen University*
Tai Chia LIN, *National Taiwan University*
Yanping LIN, *University of Alberta*
Li MA, *Tsinghua University*
Tsoy Wo MA, *University of Western Australia*
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