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樹蕙滋蘭四十年

吳恭孚教授訪談錄

我於四十年代初在香港出生。抗戰結束後不久，國共開始內戰，但家鄉還算平靜。父親思想傳統，希望我能在中國成長，故將家人送回梅縣（現已撤縣置州）。我在梅州長大，直到中學畢業後才離開。

梅州乃是客家人聚居的地方。客家人後至，落腳的地方土地貧瘠，青年人遂以讀書求進仕為出路，是故文風甚盛。兼之清季廣東沿海與外人通商，出國者眾，思想上也往往得風氣之先。以著台灣史聞名的丘逢甲，以及以「我手寫我心」而革新清末詩壇的黃遵憲都是梅州人。黃晚年退居的「人境廬」就在我的中學旁邊。

世事總有始料不及之處，先父把家人送回故鄉，原意是希望我能在新中國成長。不料事與願違，解放初期的土地改革運動中，我家階級成分竟被定為「工商業兼地主」。要知道在當時社會，地主階級乃是無產階級的敵人，輕則歧視，重則鎮壓。我就讀的東山中學是地方名校，同學以華僑子弟為主。從初一到高三我的成績都很好，但由於家庭成分不良，處處受到白眼。考大學時我的分數也很高，要進入北大、清華也沒有問題。但「地主仔」要入大學，談何容易？機緣巧合，我進入了中山大學。

解放初期，百廢待興，大家都想報效國家，故此大學以科技工程科為最熱門。我報大學科目時也以工程先行，記憶所及，數學是第四志願。但不管如何，進入大學後只希望把學科學好。於是我到了廣州。開學不久，就碰到一件令我難忘的事情：在沒有任何背景的情況下，老師要我們証明$(a + b)^2 = a^2 + 2ab + b^2$。透過研習這道題目，我明白了在數學這門學問中嚴格推理的重要性。我自恃記憶力不錯，上課時集中精神聽講解，略記一些提要，下課後便能把課堂上的講解從頭到尾推敲一遍，寫成一份詳細的筆記。故此學習數學對我而言，可說是一帆風順。

我的「不良出身」並未有因進入大學而遭遺忘，相反，一次又一次的政治運動令人感受的壓力有增無減，使我膽顫心驚。大躍進運動剛結束，內地便進入三年的自然災害時期，當時饑荒處處，民不聊生。影響所及，出國申請稍稍放寬。我抓住這個機會申請到香港探親。申請果然很快就批了下來。如此這般我便離開了讀了兩年半書的廣州，於1962年回到出生地香港。

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回到香港後，我在珠海書院完成了餘下的課程。1964年便啟程前往英國威爾斯大學Swansea分校深造。系方給我安排的導師叫Peter Rogosinski，他是泛函分析的專家。（按：泛函分析的祖師爺是波蘭數學家巴拿赫。）Rogosinski的父親原居德國，但身為猶太人受到納粹的迫害而遷至英倫，從而開創了英國泛函分析的一支。Swansea學校不大，全校只有幾個中國學生，僅我一位來自香港（摯友張佑啟兄剛脫離學生行列開始做博士後研究）。我在Rogosinski的指導下從事有序巴拿赫空間的研究，苦讀三年完成論文及做了一年博士後研究，正式於1968取哲學博士學位，又於1975年取得科學博士學位。

值得一提的是老友黃友川教授，他是我在中山大學時的學長，比我高三屆。我們先後回到香港。我在珠海時，他也在那裏任教，並教我拓撲學。我到Swansea後，把情況告訴他，不久他也來了。其後我們在中大共事二十多年，朝夕共處，遺憾的是他於1994年因病離世，壯志未酬，思之令人神傷。

畢業後在蘇格蘭鴨巴甸大學找到一份好工，見工時系主任和副校長似乎很滿意，給我加了三個薪點。但我經過詳盡的考慮後，還是婉謝了他們的好意，原因是較早時我碰到聯合書院的周紹棠博士，他力邀我回港任教。我想到家人都在香港，便決定了回來。1968年夏我便到聯合書院報到，成為中文大學的一份子，屈指一算，到如今差不多四十年了。

當時中大建校沒幾年，聯合書院還在般含道上課，理學院擠在堅巷（1972年才搬到馬料水），只有院際課程是集中在尖沙咀的星光行上的。整個聯合書院數學系僅四位教師，對我愛護有加之系主任周先生是父親式的人物，陳乃五兄（退休後移居澳洲）和葉繼榮兄（退休後移居加拿大）也是我在中山大學的學長亦與我情如手足。當時學生不多，課也不重，更沒有近年要求發表文章的壓力，師生的奮發純粹源自對知識的追求。我因循興趣，組織了一個泛函分析的討論班。初登講壇，教的是高等微積分、實分析、複分析之類，

左起：葉繼榮，Dr. Ng，周紹棠，樊畿，黃友川

發現學生不俗，其中鄭紹遠（現任香港科技大學理學院院長），朱礎豪（現任英國倫敦大學瑪利皇后書院數學講座教授）和梁志成（長期任教於聖保羅男女中學）尤為突出。當時丘成桐還在崇基唸書，他也是梅州人。我們是世交，上一代原來就是認識的。他和剛在聯合畢業留校做助教的劉家成（現任中文大學數學講座教授）及另一位助教莊國基（退休前在理大任教多年）雖沒有正式修我的課，他們於數學興趣之廣，反應之快及洞察之深都給我留下深刻印象。與成桐在舞廳林立的平安大廈家中，與家成在堅巷全理學院合用的師生休息室（實則僅乒乓球枱一張）討論Kadison有關算子代數和Phelps有關Choquet理論之情境恍如昨天。

那幾年我埋首泛函的研究，1973年把部分發表的工作整理，與黃友川合著了Partially Ordered Topological Vector Spaces一專著，由牛津大學出版社出版。然而，我最難忘的工作卻是一篇刊登在Proceedings of Cambridge Philosophical Society的文章。大家知道，Open Mapping Theorem乃是線性泛函分析的基本結果，在本科課程中也會教授的。我找到一個自然的方式，把這條定理從線性函數推廣到多值函數上去。原先文章是投往Journal of London Mathematical Society的，但卻給審稿人退了回來，理由是純為推廣而推廣，閉門造車，不可足取。不得已轉投劍橋的學報。殊不知就在文章出版的同時，在美國的S. Robinson也發表了差不多同樣的結果，而他的研究卻有一定

應用的背景。這個結果後來被稱為Robinson-Ursescu定理，是最優化理論中基本的結果，引用甚廣。我的工作雖然比他們早，但由於發表於檔次較低的期刊而知者寥寥，內心難說無憾，但英雄所見，亦足自矜矣。八十年代之後，系內多開了如控制論，最優化理論，變分法等課程。我因負責教授最優化理論而引起對這門學問的興趣，研究方向也慢慢轉到這方面，到現在還是樂此不疲。

我沒有甚麼教學秘訣，也不懂甚麼教學法。憑良心講，主要是自己歡喜教書，希望與學生共同分享數學的美，看見一張張年輕的臉從困惑到展現若有所得的微笑，我便會很滿足了。有些課程年年開，我也不覺得單調沈悶，相反，近年花在備課的時間倒是有增無減。備課時我每每嘗試易地而處，想像自己是聽眾，從而調節教學的內容和節奏。上課時我不會逐字逐行都寫在黑板上，但卻花了不少時間闡釋有關內容的來龍去脈，某條定理產生的背景，使大家能夠掌握數學思維的精微之處。在講解某個証明時，先要把大綱鉤勒一遍，各項條件的來源及作用，都必須講得清清楚楚，需要時還附以例子或反例。在課堂上，我就像一個領隊，帶領學生在數學的天地蜿蜒前行。有時我會身犯險境，故意引領他們走進一條死胡同，這時大家都停頓下來，課堂一片死寂。我要求同學們全神貫注，把思路重覆一次，看看在推理的精細處如何走了歪路犯了錯。從反面中學習，往往要比從正面看深刻得多。

回想起來，我花在學生身上的時間真真不少，尤其是班上較差的幾位。憑良心講，入門的 $\varepsilon - \delta$ 說法雖屬不少學生學習的難題，但終究是common sense，多花點精神時間總是會開竅弄通的。通常在中期考試後，我都會讓那些成績較差的學生重做試題及練習，一直到他們合格為止。此外還會安排補課，有時不得已要在周末進行，他們有的又推說忙不願意來，我比他們還要著緊。

一年復一年的過去，一屆又一屆的同學戴著方帽離開，聯絡不多，往往只靠短扎賀卡，教匠生涯，本是如此。近年為數學系籌募獎學金，與校友的聯繫比從前多。有一位已當校長的舊生來信，特意感謝我當年替他寫信找工作，使他的事業能順利開展。早前一位校友從美國來了電郵，告訴我她現在在史丹福大學攻讀計算數學的博士學位。回想五、六年前她還在中大唸書時，時常跑到我的辦公室，拿著夾滿紙條的書本筆記，逐行逐頁的發問，情境還歷歷如在目前，現在她學有所成，也可說是告慰了。

從這一年開始，我轉任研究教授（Research Professor）一職，教學量減半，行政工作全退，從此我可以專注研究和帶學生。我沒有什麼特別的嗜好，打麻將、養魚種花，都不是我的“一杯茶”。現在這樣的安排我太太最滿意了，她說我如全退下來，只會在家中書桌前呆坐，不知如何是好。我有兩個女兒，分別在香港和悉尼工作，以後我也大概會香港悉尼兩邊跑。記得多年前有一部電影叫"Love is a many splendoured thing"。我想把它改一個字，變成"Teaching mathematics is a many splendoured thing"，就可以作為我的事業的寫照了。

後記

九月尾和同事區國強與吳恭孚教授聊了兩次。這篇文章就是根據當時談話的內容整理出來的。雖然用第一身的語氣來寫，但並不是原來說話的次序。文章的標題出自《離騷》：余既滋蘭之九畹兮，又樹蕙之百畝。冀枝葉之峻茂兮，願俟時乎吾將刈。大概從事研究和培育人材，都是思想上的開墾，文化上的收割吧，因以為題。

曹啟昇記

向 Dr. Ng 致敬

一九六八年九月我剛從中大畢業，留任助教。適逢恭孚師從英國威爾斯大學回來，擔任講師一職，大家都叫他Dr. Ng，初作尊號，後成暱稱，沿用了近四十年，縱使他升任教授後也沒有改變。系中師生上下之情始終如一，由此足見一斑。當初聯合書院院址還是在港島般含道及堅巷，數學系內事務由周紹棠及陳乃五兩位先生主持。三間院校崇基、新亞、聯合，亦如今天港大、中大、科大般，互相競爭，各有傳統，自我吹捧。當時從劍橋請來的D.H. Fremling及J. Knight剛剛離開。Dr. Ng回來之後，不到半年，黃友川師亦相繼到來，不但為聯合數學系打了一強心劑，亦奠定了以後發展的基礎。

Dr. Ng於開學後便馬不停蹄，立刻著手組織討論班。當時我們學生生活簡樸，求知慾雖高，但苦無方向。系中書籍不多，雜誌只有美國數學學會及英國數學學會的幾份刊物而已。成立討論班對我們來說是相當新奇及極具挑戰性的事。Dr. Ng建議我研讀一本剛剛出版的小冊子Lectures on Choquet Theory，作者乃是Robert Phelps。沒想到一年之後，我到美國華盛頓大學當研究生，導師正是這位Phelps！由此可見，Dr. Ng是我研究生涯的啟蒙老師，在這年內奠定了我的研究方向。當年的討論班，友川師亦是主持人之一。參與的有同學亦有助教，其中包括朱礎豪、鄭紹遠、梁志成、莊國基等，丘成桐亦常從崇基老遠趕來趁熱鬧。

到美國不久，側聞Dr. Ng與陳思梅結了婚。思梅是在聯合與我同級化學系的同學。我在完成博士學位之後一直留在美國工作，至一九九五夏我回到中文大學訪問。當時數學系正處於轉折期，亟需人手，Dr. Ng積極鼓勵我回來。對個人而言，回港工作是一個非常重要的決定。事後証明，這也是一個正確的決定。Dr. Ng對我的事業再次作了重大的影響。

回到母校，忽忽十年，我對Dr. Ng的處事作風及為學精神，有了更多的了解。系中事務甚多，他分擔了不少重要的職務，其中包括研究院數學組主任、助教的教學輔導，系務會議及系行政小組的秘書等等。Dr. Ng為人正直低調，小心謹慎；他既能為大局著想又積極參與系中每一事項，校中

及系中之大小文件通告，他都一一細讀推敲，提出精闢的意見；作為系務會的秘書，他的會議紀錄也寫得格外細心詳盡。當年院系間的風風雨雨，都在Dr. Ng的維護及努力斡旋下，安然渡過。

Dr. Ng一心一意投入教學，有教無類，對時下推行形式的教學改革，雖不以為然，但他仍能將他獨有的教學精髓，融入其中。在一次校長模範教師頒獎禮中，他寫了如此的感言：

「吾有幸在學時遇良師，
工作時遇好同事、好學生，
故我視學生為伙伴，為子侄。
教學不比時下之顧客與售貨員關係，
吾戒之而力求為薪火相傳，
繼往開來之工作努力。」

恭孚師的授業精神為每一位同學稱許的同時，亦在每一位同學心中留下不可磨滅的印象。

更難得的是在這四十年間，Dr. Ng對數學的研究從未間斷。他把早期Banach空間的純理論融匯在近期以應用為主的最優化理論中，在這些領域中不斷作出新的貢獻。從今年開始他轉任“研究教授”，繼續帶領研究生，專注研究。

恭孚師退而不休，繼續與我們一起工作，我們仍會不斷聽到他爽朗兼具中氣並略帶客家口音的聲音響遍系中每一角落。

謹以此文向吳恭孚教授致敬。

劉家成

我所認識的吳恭孚老師

我們都稱呼吳恭孚教授為Dr. Ng。（但私底下卻直呼「恭孚」－「功夫」，我想這是中大數學人都知道的綽號。）Dr. Ng學問淵博，研究出色，不在話下。不過，我們學生輩所津津樂道的，自是其在教室裏所展現的學養風範，茲將小事兩三件與各系友分享，這只是拋磚引玉，相信還有更精采的故事。

大學時修過Dr.Ng兩科數：Topology和Optimization Theory。Dr. Ng教學的特色是跟學生互動頻繁，於是學生在他的課堂上非常踴躍發問。他曾經講過，若同學問題是簡單的，一句話便可解答，花不了多少時間，若問題是難回答的，這便是一個好問題，值得花時間討論。有時候，同學提出一些好的觀點或想法，他會一而再、再而三的引用。有一次，上Topology時，一位同學對一個定理提出另外一個証明，一星期後，Dr. Ng又再提起：「上星期黃XX所說的方法，也可用來証明以下的定理，…」。以後，在他的課堂上就經常聽到「黃XX的方法」了。他就是這麼的尊重學生，因此，大家都很積極參與課堂的討論。

高一屆的師兄也傳出一個故事：在大四泛函分析課上，Dr. Ng討論某一個定理，証明過後，不知怎的給同學找到一個致命的漏洞；下一堂課，Dr. Ng再次証明這定理，可是同學又再次找到漏洞，這本來是令人氣餒甚至是難堪的事情，但是Dr. Ng卻很興奮地說：「（因為你們的努力和進步，）所以我好喜歡教你們這一班！」試想，若不是擁有一顆純樸求真的心，怎會有這種反應？所以求真的精神也是Dr. Ng的特色之一。那一班師兄，在Dr. Ng的鼓勵之下，就更加努力了。屈指一算，那一班（$n \leq 10$）中，有四人再進修，獲博士學位，其中一位現任美國加州大學的教授，另外兩位則回到中大服務。

Dr. Ng在中大數學系服務幾近40年，其身教言教，影響了好幾代的中大數學人，讓我們如沐春風。其學術研究，亦是香港數學界的中堅分子。他與Dr. Wong二人合著的專書，至今仍是國際上泛函分析序結構的經典之作。記得研究生時代，曾參與Dr. Ng和Dr. Wong（黃友川教授）、及香港大學數學系的Albert Ellis所組織的biweekly seminar，此seminar前後延續了好幾年，大概是香港數學界少數成功的跨院校學術活動之一。

研究教學四十年後，他的榮休晚宴居然有超過250人報名參加，Dr. Ng真的是桃李滿門，魅力十足。

記得二十多年前，Dr. Ng額上已有深深的皺紋，看起來並不年輕。但直到今天，他依然還是這模樣，真是二十年不變(invariant)。

Dr. Ng，敬愛的老師，願你健康快樂，永遠不變。

羅春光（82）

感言點滴

我們三兄弟姐妹，都是中文大學新亞數學系的畢業生。我們的感情很好，即使在畢業後各自選擇了不同的發展方向，却能用數學語言和邏輯思維溝通。雖然哥哥在美國工作，不是常常有機會聚首，但每當碰面，總有說不盡的話題，話題中往往談及到我們許多共同關心的人和事：例如中文大學數學系的發展。

近年，數學系在各位老師、校友、同學及員工的共同努力下，享譽本港，蜚聲國際。作為數學系的畢業生，我們深感驕傲，亦非常興幸都能在數學系學習的過程中，遇到一群又熱心又認真的老師；他們對我們在數學、科研、教學及其他許多方面的啟發，令我們終生受用。而吳恭孚教授，正是這群老師的典範。我們曾分別修讀吳恭孚教授的“泛函分析(Functional Analysis)”和“最優化理論(Optimization Theory)”。吳恭孚教授的教學方式和作風，教我們心悅誠服，齊聲讚好。

事實上，吳恭孚教授的授課，又會有哪一位學生不讚好呢？或者，是因為「恭孚」教授的教學和處事方式仿如少林寺「功夫」傳授，而且作風是大師級的：認真、踏實、從不浮誇、穩打穩紮、又能啟發思考、內外功並重；以致能實而不華地對學生及友儕帶來強而持久的影響力，為學生及學系的發展奠定穩固的基礎。

吳恭孚教授要退休了，大家都捨不得，希望挖盡心思，挑一份最好的禮物送給他，以表達自己的心意。不過，我們相信，只要我們各弟子都能在各自的工作崗位上繼續用「恭孚」教授所演繹的認真踏實的作風努力工作，回饋社會，宏揚他的作風，就是對吳恭孚教授辛勤工作數十個寒暑的最佳回報。

在此，謹祝吳恭孚教授身體健康，生活愉快。並祝數學系繼續欣欣向榮，並百尺竿頭，更進一步。

潘日新 (81) 潘偉賢 (83) 潘嘉陽 (89)

一群吳恭孚教授的學生以「我們的導師-吳恭孚教授」為題彙文數篇。因稿件擠迫，此期未能逐一刊登。現僅以其文之引言* 刊出以饗讀者。

我們都是吳恭孚教授的學生，在追隨吳恭孚教授學習、研究的數年間，無一不感受到吳先生寬以待人、誨人不倦的精神。吳恭孚教授治學嚴謹，學識淵博，學術成果豐富，我們有幸與之結師生緣，數年來置身其間，耳濡目染，不僅領會了學習和研究的基本思想方法，而且學習了做人的道理。今天，借吳先生轉任"研究教授"之機，我們記錄下一些與之相處的片段，以懷念在中文大學數學系追隨吳恭孚教授學習、研究的日子。

黃力人 (93) 鄭喜印 (03) 楊衛紅 (03)
臧睿 (05) 劉春光 (06) 譚露琳 (06)

*如下載全文，請登入以下網址：
www.math.cuhk.edu.hk/special/event

數學與訊息工程雙學士學位

為了培養兼備數學與資訊科技的新一代優秀人才，增強我們的畢業生未來在社會與工作中的競爭力，數學系聯同工程學院的訊息工程學系開設了香港中文大學的第一個雙學士學位課程，即數學與訊息工程雙學士學位。

此課程2006年度招收了第一批學生，共15名，其中通過優先取錄計劃錄取的有2人，通過聯招的有8人，通過本地或海外的非聯招計劃取錄的有5人。另外，2006年度工程學院和理學院招收的內地生中有11人擬於2007年度主修此雙學位課程。

滿足該學位課程要求的學生將可獲得兩個學位。第一個學位為數學理學士學位，通常於第三年尾獲得；第二個學位為訊息工程學工程學士學位，通常於第四年尾授予。本課程的學生繳交的學費同中文大學其他課程的學生一樣。

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一百二十二萬的獎學金及活動基金；並成立了「吳恭孚教育基金」。對於各位的捐助，我們在此深切致謝！

捐款人名單：
（以姓氏英文次序排列）

張載村先生夫人　霍永鏗
林木英　李思廉　馬紹良

李思廉校友於78年畢業於數學系；一直從事中港貿易，近十多年專注在國內發展房地產。他所創立的富力地產集團不僅是國內著名的發展商，對扶貧助學等慈善事業的貢獻尤其突出。這包括李校友最近用其私人名義的近三佰萬元的捐款二筆，其一用作中文大學數學獎學金及學生交流之需，另筆則用於資助國內學生往哈佛大學追隨丘成桐校友修讀博士之費用。對數學發展關切和對師弟妹之厚愛表露無遺，盛情可感。

畢業生動向

數學系本年度共有十二位同學（本科及碩士畢業生）獲歐美各國著名大學頒發研究院課程的全額獎學金，成績裴然。

該十二位同學為李文俊、林經洋、林天然、蔣慧慧、鄭文銓、王一、龐鼎基、陳鍵行、廖振隆、王玉亮、鄭彥熹及李曉玥。十二位同學中；李文俊、鄭文銓及王一三人更入讀史丹福，普林斯頓兩所享譽盛名的學府。

Academic and Exchange Activities in Summer

Oak Ridge National Laboratory

Chan Ho Fai Tony 陳浩輝, M.Phil. Year 1
Wong Yat Sen Raymond 王逸晨, Year 3

Introduction

In July, we went to Knoxville, Tennessee, USA and worked in Oak Ridge National Laboratory for 2 months. Knoxville is a town with around 300,000 population spread through a wide area. The environment of this area is very green and natural, and the weather is a bit hot but very dry. There are nearly no high rising buildings in Knoxville and public transportation is rare except near downtown - people living here mainly travel by driving.

Internship Info

Oak Ridge National Lab (ORNL), one of the biggest labs in USA, was built during WWII, and involved in making nuclear weapon. Security is tight here especially after the 911 attack; everyday, we need to pass security check when entering. We also need to wear badges all the time.

There are several supercomputers located here: Jaguar, Cheetah and Galaxy. The lab scientists' research interest includes Biotechnology, Fusion simulation, Parallel computing. Over there, we were assigned two mentors: Dr. Wong, of JICS/UT and his research interest is in fluid dynamics and parallel computing; Dr. D'Azevedo of ORNL whose interest is in fusion problem and parallel computing.

In the first month, we learnt the ***UNIX*** system, and programming languages such as ***Awk*** script languages, ***MPI*** (Message Passing Interface, parallel computing language) and ***C***; we also attended several seminars held in ORNL.

Stepping into August, we started a project related to ***HPL*** (High Performance Computing Linpack Benchmark package) which compares the speed of the TOP500 supercomputers. HPL solves a general matrix equation after performing LU-factorization. Its computing speed is 10% faster than another routine in ScaLAPACK (Scalable LAPACK, a package for parallelly doing matrix operations). However, HPL works on double precision matrix only and our job is to extend its data-type to double complex. At the end of our stay, we have completed the task and now exploring further progress by extending to other data-types and also embedding it in ScaLAPACK.

Personal Experience and Feelings

When watching an American football match, we saw a player whose role was just kicking one shot, our friend told us that his job was only to kick. USA has a good system accepting people with different talents. Once you have an outstanding strength, you can have your own position. As far as I know, the Americans are no smarter than Hongkongers, and their working style are much more relaxed than here; however, USA leads other countries by far in terms of research. Her system of allowing talented people from different countries to contribute is the key of her success.

We met a few HK people there who shared their stories and life attitudes with us. We would like to thank the Department of Mathematics and our Mathematics alumni's donations for giving us an opportunity for having such a memorable experience. Last but not least, we would like to thank Dr. Kwai Wong and Dr. D'Azevedo wholeheartedly for their home-like care in our whole trip.

Cornell University
Fok Chi Kwong Alex 霍志廣, Year 4

In this summer, through the recommendation of Prof. Lau Ka Sing, Edward Fan and I were given an opportunity to participate in the Research Experience for Undergraduates (REU) at Cornell University.

During this two-month project period, a group of nine students, including Edward and I, worked on various topics in the analysis on fractals (which is a relatively new theory of differential equations on fractals) under the guidance of Prof. Robert Strichartz. In particular, I collaborated with Naotaka, a graduate student from Kyoto University, to study the spectrum of energy Laplacian on the Sierpinski Gasket.

I was very impressed by the way Prof. Strichartz led this project. Almost every day in the morning we were required to report to Prof. Strichartz whatever results or ideas we had got the day before. In this way the professor closely kept track of our progress, and at the same time gave us his directions and suggestions promptly. Also every week we had the so-called 'jam session', in which some students gave presentation of their work. This provided us with the opportunity to communicate mathematical ideas in a formal manner. Occasionally there were seminars aiming at undergraduates, on a variety of current mathematical topics such as free probability, arbitrariness of rank of elliptic curves, etc.

I shall say I like the REU even more than the project that I participated last summer in Caltech, as this time I had more interactions with fellow students. I cannot forget an interesting conversation with Naotaka on the cultures and languages of our countries, and with Baris, another student in Strichartz's group, on history. We also shared relaxing moments by playing frisbee together after the hefty research work.

Immediately after the REU came to an end, Baris and I went to the Young Mathematicians Conference at the Ohio State University. The Conference gathered many mathematics students who took part in the REU at other institutions this summer. We, along with other students, gave survey and report talks of our work done in the REU. In this conference I was intrigued by the numerous challenging research problems undertaken by other students. On the last day we came to know several other conference participants and took some pictures with them in the 'Number Court' near the Mathematics Tower.

On the whole, my stay in the US this summer was really an invaluable experience, which served to strengthen my determination to embark on the academic career path. I would like to express my gratitude to Prof. Strichartz for his patient guidance, and our CUHK math alumni who generously sponsored this trip. Thanks are also due to Prof. Lau, without whose support this wonderful trip would be impossible.

Cornell University
Fan Sin Tsun Edward 范善臻, Year 3

I have joined the Research Experience for Undergraduates (REU) program at the Cornell University together with Alex Fok this summer. It was a project-oriented program which gave me a sense of mathematical research to be conducted in the on going study in mathematics. The program started off with a week of intensive background knowledge learning, and then our adviser, Prof. Strichartz guided us to find a specific topic to work on. I have been collaborating with a local US student on the topic of harmonic oscillators on Sierpinski Gasket; in the mean time, he gave me a lot of new ideas through extensive discussion.

During my stay in Cornell, besides the experience from my work I also learned the foreign culture and their life style. These experiences were far beyond that obtained from any book, they open up my mind and led me to a new horizon of my life. I would strongly recommend anyone who would like some research experience to join this program in the coming years, I swear you will get more than you imagine.

Lastly, I would like to express my gratitude to the CU mathematics alumni who kindly supported my traveling and housing expenses, and also to Prof. Lau, the department head, to give me such a valuable opportunity. Without the financial support, my trip will be much more difficult. I am looking forward to see other math students benefiting from the financial aids which can fulfill their trips in the future.

U.S. - Hong Kong Undergraduate Research

Samantha Rose Braswell
University of California, Berkeley

This past summer, ten undergraduates from U.S. universities participated in a research program entitled "Numerical Analysis and Scientific Computing with Applications in Applied Science and Engineering", which is part of the National Science Foundation (NSF) sponsored program Research Experience for Undergraduates (REU). NSF allocated funds to the Colorado School of Mines (CSM) to set up an REU site in Hong Kong. As head of the mathematics department at CSM and original conspirator, Dr. Graeme Fairweather took it upon himself to arrange the REU and make the program a reality. The participating Hong Kong universities were Hong Kong Baptist University (HKBU), City University, and the Chinese University of Hong Kong. The ten American students were divided into four groups of two to three students, and each group worked on different projects relating to research in applied mathematics.

I worked with Dr. Raymond Chan, from The Chinese University of Hong Kong (CU), along with two other participants. Our research topic was high-resolution and super-resolution image reconstruction using wavelet algorithms. Dr. Chan would assign us various tasks, which usually involved writing code in Matlab, and after completion we would meet with him to go over the work and review material necessary to continue on to the next step. I learned a lot while working under Dr. Chan; he spent a good deal of time teaching us about work he had done, yet he also prompted us to come up with original ideas to solve the problems of high-resolution and super-resolution image reconstruction. Dr. Chan showed us great hospitality; not only did he volunteer his time to mentor us, but he arranged for us to share an office with graduate students at CU, have access to the computer labs in the Lady Shaw Building, be granted library privileges, and invited us to social events with other professors. He even allowed me to attend the China/France Summer School and Workshop on Advanced Mathematical Methods for Multi-Channel Image Processing in Beijing, in which he was an invited speaker.

In fact, the whole Hong Kong mathematical community was very genial. We became integrated in the greater Hong Kong mathematical community by attending conferences and meeting internationally distinguished mathematicians. We were invited to attend The Second International Conference on Structured Matrices, held at HKBU, where we heard a variety of talks on topics such as image restoration and almost block diagonal linear systems. On another occasion, we met Dr. Gene Golub of Stanford University. The following week we attended his talk on the history of numerical linear algebra at CU arranged by Dr. Chan, in

which he discussed the transformation of the field in the past century and the influential people who contributed to the area. Overall, the program was an remarkable experience; by participating in research in an international environment we were exposed to work that was being collaborated on by mathematics from all over the world. Not only were we given a great opportunity to work with Hong Kong professors, but we also learned about the Hong Kong culture and made some local friends. During our time we saw many of the local sights including the Big Buddha on Lantau Island and Victoria Peak. The program was both academically and culturally enriching, which made it a unique and beneficial opportunity for us to have as budding mathematicians and young adults.

University of Colorado at Boulder

Sun Hui 孫慧, Year 2

In the last summer, with the financial support from the CUHK Math alumni, Xu Weiyu (Benny) and I went to University of Colorado, Boulder to do a project on numerical PDE with Professor Cai Xiao-Chuan. Our topic was on the non-linear electrical activity of the heart. And our main concern was to write program and to see whether there was room for improvement. The program was much more difficult than the previous ones that I had done in the CUHK. At the beginning, we wrote a long program which didn't work. Later, Benny found a relevant paper and we programmed according to that one, and reduced the length to 1/8 of the original one. After this our works progressed smoothly and we solved problems occurred with the help of Professor Cai and his postdoctoral fellows. The project has not yet completed and we will continue in the CUHK. During leisure time, we played football, went hiking, rode bicycle, as well as made new friends. Once we cycled 7.5 hours to Denver downtown, and stayed by a large reservoir where there were all kinds of wild birds. And on the National Day, I went to Mount Evans with an American family. I touched snow in that mountain and appreciated the landscape very much.

It is really a good experience for us. We thank the Department, Professor Cai, and the CUHK Math. alumni. We hope more and more of our younger brothers and sisters in department can share such an opportunity.

The National Summer School in Mathematics

The 11th National Summer School in Mathematics has been held at The Chinese University of Hong Kong and The Hong Kong University of Science and Technology during the period from July 23rd to August 11th, 2006.

The National Summer School in Mathematics comprises a series of annual events authorized and financed by The Ministry of Education of China and The National Natural Science Foundation of China, which has started about 15 years ago. The main purpose is to strengthen the training of young mathematics researchers from all over China in some core areas of mathematics and to enlighten them with the most- updated and cutting-edge knowledge in the frontiers of mathematical researches. Since this activity brings recognitions as well as visibility, major universities in China have always been competing to hold the event. The previous ten summer schools were organized by top-ten universities in mainland China. This year is the first time ever when such an event has been organized in Hong Kong. And this turns out to be a great success. The 11th National Summer School in Mathematics was organized jointly by the Department of Mathematics at the CUHK and the HKUST. It has two major programs: Program in Analysis and Geometry at CUHK and the program in Representation Theory at HKUST. The program in Analysis and Geometry has concentrated on four courses: algebraic geometry, complex geometry, nonlinear partial differential equations, and numerical analysis, which represent some of the core areas of this field. Each course has been carefully designed to combine the basic theory with the newest developments. The principal lecturers are Professors Conan Leung, Luen-Fai Tam, Jun-Cheng Wei and Jun Zou. Furthermore, the summer school has also provided twelve invited 2-hour lectures on current developments in mathematics aiming at giving students a broad perspective of the frontiers of mathematical researches. The frontier talks have been delivered alternatively on the campuses of both universities by leading mathematicians including our colleagues: K.S. Chou, K.S. Lau, Tom Wan, etc..

Around one hundred postgraduate students and young faculty members from more than four universities and research institutes in Mainland, from Macau, and Hong Kong have officially registered for the Summer School, while more than half of them have participated in the program at CUHK. Despite the hot and humid weather, the Summer School proves to be a great success which was made possible due to the enthusiastic support from our colleagues in the department, in particular by the speakers on one hand, and the hard works done by those students who helped throughout the running of the program. Throughout the program, those participants from mainland not only have gone through a high quality and concentrated solid training in some important areas of modern mathematics and thereby have been enlightened by the new perspectives and the updated developments in the frontier of mathematics, they have also had an excellent platform to communicate with their counterparts in Hong Kong, to interact with leading mathematicians in CUHK and in Hong Kong in general, and to get a first hand knowledge of the mathematical education and researches in CUHK. Indeed, many of the participants from mainland have expressed strong interests to have academic exchanges with our colleagues or to join our Ph.D. program. The Summer School has surely enhanced the reputations and visibility of our department in the Mainland.

Personalia

Dr. Wing-chung Fong (方穎聰) has been appointed Instructor I.

Dr. Fong obtained his D. Phil. degree in mathematics from Oxford University in 2005 and his research interest is in General Relativity.

Coming Events

吳恭孚教授榮休晚宴

日期：2006年12月15日（星期五）

數學新浪潮

講題：容後公佈
日期：暫定為2007年2月3日（星期六）
地點：香港中文大學逸夫書院大講堂
講者：尹永樂教授（University of Waterloo）
語言：粵語

柳愛華紀念科學講座

講題：數學界的莫札特-陶哲軒
日期：2007年2月10日（星期六）
地點：香港中文大學邵逸夫堂
講者：劉智軒博士（香港中文大學）
語言：粵語

各位校友及數學系的友好：

看到同學、校友的近況，會否勾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。

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！

Visitors

Each year, the Department and The Institute of Mathematical Sciences received many visitors. They come from all over the world and for various period of time, participate in our seminars and sometimes teach courses. These attested the attractiveness and international nature of our programmed. The following is a partial list of them in 2005-06.

Adi ADIMURTHI, *Tata Institute of Fundamental Research.*
Shigeki AKIYAMA, *Niigata University.*
Steve ALTSCHULER, *Harvard University.*
Malchiodi ANDREA, *SISSA.*
Catherine BANDLES, *University of Basel.*
Tony CHAN, *University of California, Los Angeles.*
Ke CHEN, *The University of Liverpool.*
Zhiming CHEN, *Chinese Academy of Sciences.*
Cho-Ho CHU, *Queen Mary, University of London.*
E.N. DANCER, *University of Sydney.*
Manuel DEL PINO, *Universidad de Chile.*
Haibao DUAN, *Chinese Academy of Sciences.*
Weinan E, *Princeton University.*
Aihua FAN, *Université de Picardie.*
Ronald FINTUSHEL, *Michigan State University.*
Sen HU, *University of Science and Technology of China.*
Chun Kong LAW, *National Sun Yat-Sun University.*
Yng-Ing LEE, *National Taiwan University.*
Peter LI, *University of California, Irvine.*
Tian-Jun LI, *University of Minnesota.*
Zhilin LI, *North Carolina State University.*
Tai Chia LIN, *National Chung Cheng University & National Taiwan University.*
Tzon-Tzer LU, *National Sun Yat-sen University.*
Franklin LUK, *Rensselaer Polytechnic Institute.*
Philip MAINI, *Oxford University.*
Esmond NG, *Lawrence Berkeley National Lab.*
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