

**OBITUARY**  
**KAI LAI CHUNG, 1917-2009**

Kai Lai Chung, one of the leading probabilists of the second half of the 20th century and Professor Emeritus of Mathematics at Stanford University, passed away on June 1, 2009, at the age of 91. He is survived by his wife, Lilia, three children, Daniel, Marilda, and Corinna, and four grandchildren, Alex, Adam, Davison, and Vanessa.

Kai Lai Chung was born in 1917 in Shanghai, China, to a family with roots in Hangzhou in Zhejiang Province. He entered Tsinghua University in 1936 and graduated in Mathematics in 1940. During the war with Japan, major universities in the Beijing-Tianjin region moved to the southwest city of Kunming and regrouped as the National Southwestern Associated University where Chung worked in a position analogous to that of assistant professor. During this period, he first studied number theory with Lo-Keng Hua and then probability theory with Pao-Lu Hsu. In 1944 he won a highly competitive Boxer Rebellion Indemnity scholarship for study in the United States and arrived at Princeton University in December 1945. He completed his Ph.D. at Princeton in 1947 with Harald Cramér as advisor (Cramér was visiting Princeton from Sweden at the time — Samuel Wilks and John Tukey were the other members of the dissertation committee). Chung's thesis was titled "On the maximum partial sum of sequences of independent random variables." Subsequently he held academic appointments at the University of Chicago, Columbia University, University of California at Berkeley, Cornell University, and Syracuse University. He joined Stanford University in 1961 and remained there until his retirement in 1988. Over the years, he held extended visiting appointments at several institutions: University of Strasbourg (France), University of Pisa (Italy), and the ETH (Eidgenössische Technische Hochschule) of Zurich (Switzerland). He held the George A. Miller Visiting Professorship at the University of Illinois at Urbana-Champaign in 1970-71, he was a Fellow of the Institute of Mathematical Statistics, and in 1976 he was made an Overseas Fellow of Churchill College, Cambridge (UK).

Kai Lai Chung was a great innovator and his research had a major influence on several areas in probability: sums of independent random variables, Markov chains in continuous time, time reversal of Markov processes, probabilistic potential theory, Brownian excursions, and gauge theorems for the Schrödinger equation. He authored 133 journal articles spanning a period of 70 years. A selection of his works was recently published by World Scientific in celebration of his 90th birthday. In addition to his research articles, Kai Lai Chung's eleven books have influenced generations of students of probability, both graduate and undergraduate. He was well known for his elegant style, his clarity and precision in exposition, and his lively prose. His widely used graduate text "A Course in Probability Theory" is now in its third edition, and his popular undergraduate text, "Elementary Probability and Stochastic Processes" (with Farid AitSahlia as coauthor for the current fourth edition), has appeared in English, Chinese, German, Persian, Russian and Spanish.

Kai Lai Chung taught probability for nearly 40 years and supervised 14 Ph.D. students: Warren Hirsch, Rafael Chacon, William Pruitt, Norman Pullman, Naresh Jain, Arthur Pittenger, Robert Smythe, Michael Chamberlain, Christopher Nevison, Michael Steele, Ruth Williams, Elton Hsu, Ming Liao, and Vassilis Papanicolaou. The Mathematics Genealogy project currently lists a total of 127 academic descendants for Kai Lai Chung. His enthusiasm for mathematics was evident in his energetic classroom and research presentations and in his lively one-on-one discussions. He had a spirited and candid delivery style. He is particularly remembered by collaborators and colleagues for his stimulating questions, delivered in person, or by letter and phone, and in later years by fax.

In 1981, Kai Lai Chung, along with Erhan Çinlar and Ronald Gettoor, initiated the "Seminars on Stochastic Processes." These conferences, with their innovative structure of just a few formal talks, allowing plenty of time for informal discussions and research problem sessions, continue as highly successful annual meetings to this day. The 1987 Seminar, held at Princeton University, honored Kai Lai Chung and Gilbert Hunt around the time of their retirements. Among the other

participants were Claude Dellacherie, Paul-André Meyer, and Jacques Neveu, who came from France to honor Chung and Hunt, and also to tell of their respective important influences on the French probability school. The 2010 Seminar, to be hosted by the University of Central Florida on March 11-13, 2010, will have a special session to commemorate Kai Lai Chung's contributions to probability.

Kai Lai Chung also played an influential role in the development of probability theory in his native China immediately after the chaotic years of the Cultural Revolution (1966-1976). His visit to China in 1979 (together with Joseph Doob and Jacques Neveu) was the starting point for renewed contact of Chinese probabilists with the West. He visited China many times after that, giving numerous lectures and short courses, and helped young Chinese students gain opportunities to study in the United States. He also served as an external examiner for several Universities in the Asian region, including the National University of Singapore. A conference titled "From Markov Processes to Brownian Motion and Beyond" will be held at Peking University, China, on June 13-16, 2010, to honor the memory of Kai Lai Chung.

Kai Lai's zest for life, combined with his energetic curiosity, was apparent to all who knew him, both within and outside of the community of mathematics. Besides his pursuit of mathematics, he had broad cultural interests. Educated in a classical Chinese tradition, he was deeply familiar with literary traditions and forms of the Chinese language. His family recalls how, in his many travels to China from 1979 onwards, he sought out and helped re-establish the stature of writers, poets, painters, and calligraphers he counted as old friends. His passion for culture was not restricted to that of his homeland. In his extensive travels, he always made sure to see important historical, cultural, or natural sites. He surprised many with his wide ranging and intimate knowledge of literature and music, especially opera. He spoke several languages, and particularly delighted in practicing Italian, which he taught himself in his retirement.

We are grateful for having known Kai Lai, for his inspiration and guidance, and his many engaging conversations over the years. He was unique and highly memorable; he will be missed.

Farid AitSahlia, University of Florida  
Erhan Çinlar, Princeton University  
Elton P. Hsu, Northwestern University  
Ruth J. Williams, University of California, San Diego

*A memorial event will be held on Friday, November 6, 2009, at Stanford University. (For information see the website at <http://math.stanford.edu/KLChung-Memorial.html>.) The family requests that charitable donations in memory of Kai Lai Chung be made to the Kai Lai Chung memorial fund at Stanford University, Mathematics Department.*

*October 4, 2009*

[This obituary utilizes material first published in the preface of the Selected Works of Kai Lai Chung, edited by Farid AitSahlia, Elton Hsu and Ruth Williams, published by World Scientific (2008), <http://www.worldscibooks.com/mathematics/6976.html>, and in the obituary written by Farid AitSahlia, Erhan Çinlar, Elton Hsu and Ruth Williams, published in the Bulletin of the Institute of Mathematical Statistics (Vol 38, issue 7, 2009), <http://bulletin.imstat.org>.]