BIOGRAPHY OF DR. KY FAN, WORLD RENOWNED MATHEMATICIAN, PROFESSOR EMERITUS OF UC SANTA BARBARA

Dr. Ky Fan was born on September 19, 1914 in the beautiful city Hangzhou of China. (This city, along with another city Suzhou, are said in China to rival Heaven in their beauty and prosperity.) His father Qi Fan served at the district courts of the cities Jinhua and Wenzhou. Ky Fan studied at several schools in Hangzhou and other cities, and earned top grades in all courses. He enrolled in Peking University in 1932. Originally, he intended to study engineering. Under the influence of his uncle Zuxun Feng, the chair of the Mathematics Department of Peking University, he chose to study mathematics instead. As it turned out later, that was a very fortunate choice for the developments of several fields of mathematics.

The young Fan excelled in mathematics with ease. During the summer of his second year at the university, he translated two German textbooks "Einführung in die Analytische Geometrie und Algebra" and "Vorlesungen über Matrizen", and combined them into one textbook "Analytic Geometry and Algebra", which was published in 1935 by a renowned publishing company in China. During his four years of study at Peking University, Fan also produced a translation of Landau's textbook on algebraic number and ideal theory, and wrote a book on number theory together with a fellow student, both of which were published by the above publishing company.

After receiving his B.S. degree from Peking University in 1936, Fan was hired by the university as an instructor. In 1939, he was selected by the China-France Education Foundation and went to Paris to pursue more advanced study in mathematics. Two years later, i. e. in 1941, Fan finished his thesis "Several basic concepts of general analysis" under the direction of Maurice Fréchet, and received his D. Sc. from University of Paris. Then he became a research fellow at French National Center of Scientific Research, and also conducted research at Institute of Henri Poincaré. In 1945, at the end of WWII, Dr. Fan had already published more than

20 research papers and a monograph with the title "Introduction a la Topologie Combinatoire", which he co-wrote with Fréchet.

After WWII, it became easier to travel oversea and Dr. Fan came to the Unites States. He was a member of the Institute for Advanced Study in Princeton from 1945 to 1947, when e. g. Hermann Weyl and Von Neumann were also there. Then he joined the faculty of the University of Notre Dame, later that of Northwest University. In 1965, Dr. Fan settled in Santa Barbara and joined the faculty of UC Santa Barbara. From 1978 to 1984, he also served twice as the director of the Mathematics Institute of Academia Sinica in Taiwan.

When Dr. Fan retired in 1985, an international mathematical conference was held at UC Santa Barbara to celebrate the event. Many mathematicians from all over the world traveled to Santa Barbara to participate. Mathematical papers presented at the conference were later published in "Nonlinear and Convex Analysis: Proceedings in Honor of Ky Fan". An entire volume of the mathematical journal "Topological Mathods in Nonlinear Analysis" was dedicated to Dr. Fan on the occasion of his 80th birthday.

Dr. Fan was a great mathematician with unusually versatile achievements. His research covered many fields of mathematics, including both linear and nonlinear analysis, from finite dimensions to infinite dimensions, and extends from theoretic to applied mathematics. A large number of Ky Fan theorems, Ky Fan lemmas, Ky Fan inequalities or equalities, and Ky Fan norm etc. are well-known and constantly cited in the literature of many fields of mathematics.

Dr. Fan made fundamental contributions in nonlinear analysis, convex analysis and inequalities, fixed point theory, operator and matrix theory, linear and nonlinear programming, complex analysis, topology, and topological groups. His influence in those fields and other fields is profound and lasting. A number of his research results created new directions of mathematical research.

Dr. Fan's mathematical research is often concerned with the foundation and central issues of a field or direction. Many of his results have become classics. His formulations always exhibit exemplary beauty of pure mathematics, with natural

conditions, concise statements and elegant proofs. On the other hand, his results have found wide applications in many fields, in particular in mathematical economics. For example, his work in fixed point theory, in addition to influencing nonlinear functional analysis, has found wide applications in mathematical economics and game theory, potential theory, calculus of variations, and differential equations. The basic theorem of the mathematical economics theory of the Nobel laureate G. Debreu can directly be derived from a minimax principle of Dr. Fan. In short, Dr. Fan's mathematical work exhibits beautifully the unity of pure and applied mathematics.

Dr. Fan had 21 graduate students, and 89 mathematical descendants. His 140 papers and books have been cited over 4000 times.

At the retirement of Dr. Fan in 1984, the Ky Fan Visiting Assistant Professorship in the Mathematics Department of UC Santa Barbara was established with his donation. In 1999, Dr. Fan and his first wife Yu-Fen Fan made a gift of $1M to the American Mathematical Society to establish the Ky and Yu-Fen Fan Endowment, to foster collaborations between Chinese mathematicians and those in other parts of the world. Earlier, Dr. Fan donated almost his entire collection of mathematical books and magazines to Peking University.

Dr. Fan could speak several languages. He joked: "I speak English with a French accent, speak French with a German accent, and speak German with a Chinese accent."

Dr. Fan was known to be a very strict teacher. He told his students to think on mathematics at "every waking moment".

Dr. Fan was always very kind and lent a helping hand to many people.

Dr. Ky Fan passed away peacefully in Santa Barbara on March 22, 2010, at the age of 95. His first wife Yu-Fen Fan died in 1999. He is survived by his second wife Xiaoxia Wang and stepson Zhaohuan Wu.

written by R. Ye, with the following references: 1. "Ky Fan", Wikipedia. 2. "Biographies of Famous Mathematicians of the World: Ky Fan" (in Chinese), by Dian-Yu Zhang.