

*Celebrating the life and legacy of*

**CHIA-KUN “JOHN” CHU**

1927-2023



**FU FOUNDATION PROFESSOR *EMERITUS***  
**OF APPLIED MATHEMATICS AT**  
**COLUMBIA ENGINEERING**

**SATURDAY, APRIL 29, 2023**  
**2:00 PM, ST. PAUL'S CHAPEL**  
**COLUMBIA UNIVERSITY IN THE CITY OF NEW YORK**

# *Order of Service*

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## *Prelude*

Christopher Johnson, organist

Chorale preludes

Bach

Hyfrydol, Moderato maestoso (C major)

Vaughan Williams

## *Welcome*

Shih-Fu Chang, Dean, the Fu Foundation School of Engineering and Applied Science

Marc Spiegelman, Chair, Department of Applied Physics and Applied Mathematics

## *Reflections from colleagues*

Gerald Navratil, Edison Professor of Applied Physics

David Keyes, Founding Dean, Mathematical and Computational Sciences, KAUST

## *Music*

Yeou-Cheng Ma, MD, violin

Sonata No.2 in A minor, BWV 1003 (III. Largo)

Bach

## *Reflections from alumni*

Ralph Izzo, BS '78, MS'79, PhD '81

Yurij Baransky, PhD '87

## *Reflections from friends & family*

Martin Goldstein, MD

Barbara Chu (reading a eulogy from Sin-Ming Shaw, BS '67, MA '69, PhD '71)

Beatrix Chu

Benjamin Eckersley

## *Music*

Yeou-Cheng Ma, MD, violin

Sonata No.3 in C major, BWV 1005 (I. Adagio)

Bach

## *Postlude*

Christopher Johnson, organist

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Please join us for a reception immediately following the service at  
Columbia University's Faculty House

*With special thanks to Dr. Yeou-Cheng Ma, violinist,  
and Christopher Johnson, organist*

**Chia-Kun (John) Chu**, the Fu Foundation Professor *Emeritus* of Applied Mathematics at Columbia Engineering, was a pioneer in computational mathematics. His work in fluid dynamics, magnetohydrodynamics, and shock waves garnered him international recognition while his zeal for his life's work prompted him to work tirelessly to create a home for applied mathematics at Columbia University. He is one of only seven mathematicians to receive an Honorary Doctor of Science Degree in Columbia's 252-year history.

Professor Chu was born in Shanghai in 1927 and was the son of parents with various degrees of Western education - his father received an MBA from NYU in 1929 and his mother spoke fluent English. He graduated in 1944 from St. John's University High School, where the curriculum was half Chinese and half English. He was accepted at St. John's University but decided to take the entrance examination for Chiao Tung (now Jiaotong) University, the national science and engineering university.

"I didn't think I had much of a chance, but I got in," he said. After doing extremely well in his university studies, Chu came to the United States for graduate work. He received his master's degree in 1950 from Cornell and accepted a job as an engineer at General Electric. "I was happy at GE," he said, "and was all set in a special advanced program for engineers. And then, in 1953, a major incident occurred."

That incident was a telephone call from Professor Chu's advisor at Cornell, who had moved to Stevens Institute of Technology, offering him a position as an assistant professor there. The selling point was that Professor Chu would be near the Courant Institute of Mathematical Sciences. "On Friday, I interviewed for and accepted the position at Stevens and, on the following Monday, I interviewed with Richard Courant. He asked me what I needed for a salary and I said, 'I suppose if they are offering me an assistant professorship, my answer to you should be zero.' I was accepted as a Ph.D. student and it changed my life."

In 1959, he became the first Chinese student to receive a Ph.D. from Courant Institute. He taught at Pratt Institute and NYU Engineering before joining the Columbia Engineering and Applied Science faculty in 1963 as a visiting research scientist in the plasma physics laboratory. He was granted tenure at Columbia and was named a full professor in 1968. He was one of the original nine members of the faculty of the Department of Applied Physics and Nuclear Engineering; he served as the chair of the Plasma Physics Committee from 1966-1967, 1970-1971, and 1974-1977; and was chair of the Applied Mathematics Committee from 1978-2003. He also served as Chair of the Department of Applied Physics and Nuclear Engineering from 1982-1983, 1985-1988, and 1995-1997.

In 1999, he was named Fu Foundation Professor of Applied Mathematics. As a theoretician working with plasma physics, he was delighted when then dean Peter Likins asked him to form a new program in applied mathematics as a successor to the Mathematical Methods program already functioning well under Prof. Morton Friedman. Its first home was in Applied Physics and, in 1997, the name of the department was changed to Applied Physics and Applied Mathematics, fully recognizing the program.

Professor Chu was key in promoting the endowment that established the Fu Foundation School of Engineering and Applied Science. This endowment spurred the expansion of the School, and its rise in prominence.

Professor Chu was named a John Simon Guggenheim Foundation Fellow from 1971-1972, a Fellow of the American Physical Society in 1971, and Fellow of the Japan Society for the Promotion of Science in 1979. He was listed in Who's Who in America in 1983 and was a Sherman Fairchild Distinguished Scholar at Caltech in 1984. He was named an Advisory Professor at Shanghai Jiao Tong University in 1985, an Honorary Research Professor at the Institute of Mechanics from the Academia Sinica in 1988, the Wei Lun Foundation Lecturer at the Chinese University of Hong Kong in 1991, and an Honorary Professor of Mechanical Engineering at Hong Kong University in 1993. He received Columbia University's Great Teacher Award in 1985.

Professor Chu, whose advice and guidance helped hundreds of students for more than four decades, retired in 2003 but he continued to maintain contact with most of his 24 Ph.D. students and many of his former undergraduate students. He was awarded an Honorary Doctor of Science Degree from Columbia University in 2006 and was recognized by the Asian Columbia Alumni Association (ACAA) at their 20th Anniversary Gala in 2016.

In a letter nominating Professor Chu for an honorary degree, Professor Michael Mael, former APAM Department Chair, wrote: "Chu is one of the great pioneers of computational mathematics and he is the visionary leader for applied mathematics within Columbia University. His work in fluid dynamics, magnetohydrodynamics, and shock waves is internationally recognized. He coined the term "computational fluid dynamics" and pioneered numerical and mathematical methods for understanding the propagation of shock waves that occur in many different physical circumstances. These contributions have made a lasting and profound impact to the development of applied mathematics.

Professor Chu has also been the spiritual force driving the growth of applied mathematics at Columbia University and a beloved and founding leader of the Department of Applied Physics and Applied Mathematics. With a warm and engaging personality, Chu inspired his colleagues to interdisciplinarity, departmental harmony, and devotion to the University. By way of personal example in both teaching and service, he has been pivotal to hundreds of undergraduate and graduate students, and he has helped to secure the lasting success of applied mathematics within the Fu Foundation School of Engineering and Applied Science."

