

Princeton University

HONORS FACULTY MEMBERS
RECEIVING EMERITUS STATUS



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CONTENTS

Faculty Members Receiving Emeritus Status 2015

Steven L. Bernasek	3
David Botstein.	6
Erhan Çinlar	8
Caryl Emerson.	11
Christodoulos A. Floudas	15
James L. Gould.	17
Edward John Groth III.	20
Philip John Holmes.	23
Paul R. Krugman	27
Bede Liu	31
Alan Eugene Mann	33
Joyce Carol Oates	36
Clarence Ernest Schutt	39
Lee Merrill Silver	41
Thomas James Trussell.	43
Sigurd Wagner	46

BEDE LIU



After 53 years at Princeton, Bede Liu, professor of electrical engineering, is transferring to emeritus status on July 1, 2015.

Born in Shanghai, China, in 1934, Bede Liu studied at the National Taiwan University (Taipei, B.S.E.E. 1954) and at the Polytechnic Institute of Brooklyn (M.E.E. 1956, D.E.E. 1960). Bede's father, Henry Liu, also attended Poly and received his M.E.E. in 1956 at the same commencement as Bede.

After brief stints at the Western Electric Co., DuMont Laboratories, and Bell Laboratories, Bede joined Princeton University in 1962 and was one of the first occupants of the new Engineering Quadrangle. He and John Thomas built the information sciences and systems group, which, to this day, is one of the crown jewels in electrical engineering.

While at Princeton, Bede has conducted pioneering research on signal processing, video coding, digital watermarking, and multimedia technology. He is recognized as one of the fathers of the technology of digital signal processing. His research has consistently been at the cutting edge, with key contributions in both theory and applications, which have had lasting impacts on further developments. His milestone works include signal processor implementation without hardware multipliers, one-bit signal processing, analyzing accuracy limitations of basic signal processing algorithms, a highly efficient way for motion compensated video coding, a graph approach to analyzing the content of videos, and multimedia data hiding.

Bede often commented on the rich rewards that he had enjoyed from interacting with the many brilliant, creative students, both undergraduates and graduates, whom Princeton managed to attract, and the joy to hear graduates relating their work and accomplishments. He has supervised and co-supervised 53 Ph.D.'s at Princeton. The majority of them have been successful in their continuing research relating to signal processing, video coding,

and multimedia. Among them are two members of U.S. National Academy of Engineering (one of them, Robert E. Kahn, widely acknowledged as one of the fathers of the Internet), 25 Institute of Electrical and Electronics Engineers (IEEE) fellows, several fellows of various learned societies, two past presidents of the IEEE Signal Processing Society, one IEEE Centennial Medalist, and four IEEE Millennium Medalists. Twenty-six of them are or have been professors at major universities in U.S. and abroad, two deans of engineering, a chief scientist of the Federal Communications Commission, and several rising executives in industry.

At Princeton, Bede served as the electrical engineering department chair from 1994 to 1997. In addition to his research and teaching, he consulted at United Technologies on low-flying terrain-following radar and on the reliability of signal multiplexers of supersonic passenger plane. He also consulted at RCA on digital synthetic aperture radar and at Siemens Corporate Research on image processing.

He has been active in IEEE, holding the office of the president of its Circuit and Systems Society in 1982 and as a director on the board of IEEE in 1984 and 1985. He is a life fellow of IEEE.

Bede coauthored two books: an introductory textbook on digital signal processing and a research monograph on multimedia data hiding. He also published 250 technical papers and received 12 U.S. patents. In recognition of his contributions, he received the highest awards from two IEEE societies, Circuits and Systems, and Signal Processing. He is a member of the U.S. National Academy of Engineering, an academician of Academia Sinica (Taipei, ROC), and a foreign member of the Chinese Academy of Sciences (Beijing). He also holds the title of honorary professor of the Chinese Academy of Sciences (Beijing) and of the Chinese University of Electronics Science and Technology (Chengdu, China).