



Robert Calderbank

Director of the Information Initiative, Duke University

BIOGRAPHY

Robert Calderbank is Director of the Information Initiative at Duke University, where he is Professor of Mathematics and Electrical Engineering. Prior to joining Duke as Dean of Natural Sciences in 2010, he directed the Program in Applied and Computational Mathematics at Princeton University. Prior to joining Princeton in 2004 he was Vice President for Research at AT&T, in charge of what may have been the first industrial research lab where the primary focus was Big Data.

Professor Calderbank is well known for contributions to voiceband modem technology, to quantum information theory, and for co-invention of space-time codes for wireless communication. His research papers have been extensively cited and his inventions are found in billions of consumer devices. Professor Calderbank was elected to the National Academy of Engineering in 2005 and has received a number of awards, including the 2013 IEEE Hamming Medal for his contributions to information transmission, and the 2015 Claude E. Shannon Award.



14TH ANNUAL SHANNON MEMORIAL LECTURE

MONDAY, OCTOBER 10, 2016
2pm: Lecture
3pm: Reception

**Qualcomm Institute/Calit2 Auditorium
Atkinson Hall
University of California, San Diego**



WELCOME

To commemorate the achievements of Claude Elwood Shannon an endowed lectureship has been established at the University of California, San Diego.

Each year an outstanding information theorist is selected to present the Shannon Memorial Lecture on or about Shannon's birthday (April 30th). A bronze bust of Shannon, in the lobby of the Center for Memory & Recording Research, bears a plaque with the following inscription:

CLAUDE ELWOOD SHANNON (1916-2001)

Father of Information Theory

"His formulation of the mathematical theory of communication provided the foundation for the development of data storage and transmission systems that launched the information age."

*Dedicated October 16, 2001
Eugene Daub, sculptor*

PREVIOUS SPEAKERS

PROF. TOBY BERGER	2003
PROF. LLOYD R. WELCH	2004
PROF. ROBERT J. MCELIECE	2005
PROF. RICHARD BLAHUT	2006
PROF. GIUSEPPE CAIRE	2007
DR. ERIK ORDENTLICH	2007
PROF. ALON ORLITSKY	2007
PROF. ALEXANDER VARDY	2007
PROF. SERGIO VERDÚ	2008
PROF. ROBERT M. GRAY	2009
PROF. ANDREW VITERBI	2010
PROF. THOMAS COVER	2011
PROF. SHLOMO SHAMAI	2012
PROF. ABBAS EL GAMAL	2013
PROF. RÜDIGER L. URBANK	2014
DR. MICHAEL LUBY	2015

The Center for Memory and Recording Research & Qualcomm Institute & The Information Theory and Applications Center

are honored to present the 17th speaker in the Shannon Memorial Lecture series

Robert Calderbank

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will present a lecture entitled

Remembering Shannon

The foundation of our Information Age is the transformation of speech, audio, images and video into digital content, and the man who started the digital revolution was Claude Shannon. He arrived at the revolutionary idea of digital representation by sampling the information source at an appropriate rate, and converting the samples to a bit stream. He then characterized the source by a single number, the entropy, which quantifies the information content of the source, and he created coding theory, by introducing redundancy into the digital representation to protect against corruption.

Shannon started from the grand challenges of his day, he developed models that captured what made them so difficult, translated these challenges into mathematical terms and then developed fundamental limits. This talk will review some of what Shannon did, and it will speculate about what he might have done if he were among us today.