Center for Memory and Recording Research
&
Department of Electrical and Computer Engineering

PRESENTS

JACK KEIL WOLF LECTURE

PROF. HENRY D. PFISTER

DECEMBER 1, 2017
Lecture 2 PM, Reception 3 PM

JKW AUDITORIUM
CMRR Building

– biography –

Henry D. Pfister received his Ph.D. in electrical engineering in 2003 from the University of California, San Diego and is currently an associate professor in the Electrical and Computer Engineering Department of Duke University with a secondary appointment in Mathematics. Prior to that, he was a professor at Texas A&M University (2006-2014), a post-doctoral fellow at the E cole Polytechnique Federale de Lausanne (2005-2006), and a senior engineer at Qualcomm Corporate R&D in San Diego (2003-2004).

He received the NSF Career Award in 2008 and a Texas A&M ECE Department Outstanding Professor Award in 2010. He is a coauthor of the 2007 IEEE COMSOC best paper in Signal Processing and Coding for Data Storage and a coauthor of a 2016 Symposium on the Theory of Computing (STOC) best paper. He served as an Associate Editor for the IEEE Transactions on Information Theory (2013-2016) and a Distinguished Lecturer of the IEEE Information Theory Society (2015-2016).

His current research interests include information theory, communications, probabilistic graphical models, and machine learning.

– abstract –

"Insight from Simple Questions: Three Examples"
This talk covers three research problems I have considered and their relationship to Jack Wolf's work. Each topic is motivated by a simple question whose answer provided some insight into a deeper question. First, the connection between Prony's method and algebraic decoding (described by Wolf in 1967) will be used to motivate the question: Can one compute the amplitude and frequency of 2 complex sinusoids using only 3 samples, and what does this mean for error correction? Next, a multi-user detection problem for wireless communication will be used to motivate the question: How can cellular systems with successive cancellation approach the equal-rate point of the multiple-access with equal-power users? Finally, the close connection between Polar codes and Reed-Muller codes motivated the question: Can Reed-Muller codes achieve capacity?

The format of this talk was motivated by Jack Wolf's penchant for asking simple playful questions that contain the essence of a deeper problem. This style makes research fun and helps keep students engaged. Of course, selecting the right question is more art than science.