

**LORNE CAMPBELL LECTURESHIP**

# The Mathematics of Modems



## Frank R. Kschischang

Distinguished Professor of Digital Communication  
University of Toronto

**Friday November 23**

**2:30-3:30 pm**

**Jeffery Hall room 126**

**ABSTRACT:** Virtually all practical digital communications systems in use today include some form of error-control coding scheme. In this talk, I will review the theory and development of error-correcting schemes that can achieve, with practical decoding complexity, a performance approaching the fundamental information-theoretic limits established by Claude E. Shannon over seven decades ago

Frank R. Kschischang received the B.A.Sc. degree (with honours) from the University of British Columbia in 1985 and the M.A.Sc. and Ph.D. degrees from the University of Toronto in 1988 and 1991, respectively, all in electrical engineering. He holds the title of Distinguished Professor of Digital Communication in the Department of Electrical and Computer Engineering at the University of Toronto, where he has been a faculty member since 1991. During 1997-98, he was a visiting scientist at MIT, Cambridge, MA; in 2005 he was a visiting professor at the ETH, Zurich, and in 2011 and again in 2012-13 he was a visiting Hans Fischer Senior Fellow at the Institute for Advanced Study at the Technical University of Munich.

His research interests are focused primarily on the area of channel coding techniques, applied to wireline, wireless and optical communication systems and networks. In 1999 he was a recipient of the Ontario Premier's Excellence Research Award and in 2001 (renewed in 2008) he was awarded the Tier I Canada Research Chair in Communication Algorithms at the University of Toronto. In 2010 he was awarded the Killam Research Fellowship by the Canada Council for the Arts. Jointly with Ralf Koetter he received the 2010 Communications Society and Information Theory Society Joint Paper Award. He is a recipient of the 2012 Canadian Award in Telecommunications Research. He is a Fellow of IEEE, of the Engineering Institute of Canada, and of the Royal Society of Canada.

During 1997-2000, he served as an Associate Editor for Coding Theory for the IEEE Transactions on Information Theory, and from 2014 to 2016, he served as this journal's Editor-in-Chief. In 2016, he received the Aaron D. Wyner Distinguished Service Award of the IEEE Information Theory Society.