

Gerhard Kramer
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Gerhard Kramer is Alexander von Humboldt Professor and Chair of Communications Engineering (Lehrstuhl für Nachrichtentechnik or LNT) at the Technical University of Munich (TUM). At TUM, he is responsible for teaching and research on the topics of information theory, communications theory, and coding. His research interests are primarily in these areas, with applications to wireless, copper, and optical fiber networks.

Among other duties at TUM, he is director of the Master of Science in Communications Engineering (MSCE) Program since 2010, a member of the university Appointment and Tenure Board since 2012, and deputy director of the International Graduate School of Science and Engineering (IGSSE) since 2016. From 2011-2017, he was a member of the advisory council of the TUM Institute for Advanced Study.

Gerhard Kramer received the B.Sc. and M.Sc. degrees in electrical engineering from the University of Manitoba, Canada, in 1991 and 1992, respectively, and the Dr. sc. techn. degree from the ETH Zurich, Switzerland, in 1998. From 1998 to 2000, he was with Endora Tech AG, Basel, Switzerland, as a communications engineering consultant. From 2000 to 2008 he was with the Math Center at Bell Labs in Murray Hill, NJ, as a Member of Technical Staff. He joined the University of Southern California (USC), Los Angeles, CA, as a Professor of Electrical Engineering in 2009. He joined TUM in 2010.

Gerhard Kramer has received several recognitions for his research. His doctoral thesis introduced causally-conditioned directed information, an idea that builds on Marko's free information and directed transinformation, and Massey's directed information, and that characterizes information flow in networks. The thesis was awarded an ETH medal in 1999. During his doctoral studies he also worked on linear cryptanalysis of block ciphers, and on code time division multiple access (CTDMA).

At Bell Labs, Gerhard Kramer worked mainly on Shannon theory for feedback, interference, and relay communications. He also developed basic theory for empirical coordination, multiple description source coding, channel coding for multi-input multi-output (MIMO) channels, extrinsic information transfer (EXIT) charts and the "area property", optical fiber capacity, wiretap channels, and digital subscriber line (DSL) channel estimation. He received the 2005 Stephen O. Rice Prize Paper Award of the IEEE Communications Society for his work on coded modulation for MIMO, the 2011 Vodafone Innovations Prize for his work on relay communications, and a 2014 Paper Award of the European Association for Signal Processing (EURASIP) for work on wiretap channels. He was a Thomson Reuters Highly Cited Researcher for high-impact work in Computer Science during 2002-2014.

At Bell Labs, Gerhard Kramer played key roles in initiating two applied projects. First, Lucent's transition to using phase shift keying and higher-order modulation for long-haul optical fiber links. Second, Alcatel-Lucent's transition to using vectoring for DSL. He was a member of two teams recognized by Bell Labs teamwork awards: a long-haul optical fiber team and a BLAST (Bell Labs Layered Space-Time) team. He received a 2012 Thomas Alva Edison Patent Award from the R&D Council of New Jersey for an invention that improves DSL channel estimation. He has fifteen issued patents.

Gerhard Kramer received an Alexander von Humboldt Professorship in 2011, which is the highest valued international award for research in Germany, and honors academics of all disciplines from abroad who are internationally recognized as leaders in their field. At TUM, he has supported numerous doctoral researchers and postdocs on a broad range of topics in communications engineering, including wireless (coarse quantization, MIMO precoding, relaying, network coding, waveforms), optical (capacity, shaping, phase noise), and basic theory (coding, secrecy, stealth, compression). He personally likes to work on multi-user information theory and the capacity of fiber-optic channels, and he is proud of the LNT research staff's independent success on coded modulation, and of their numerous important contributions to information theory and communications algorithms. Gerhard Kramer received a 2015 Lecturer Award from the Student Association of the TUM Department of Electrical and Computer Engineering for teaching Digital Communications.

Gerhard Kramer is an IEEE Fellow since 2010. He has been particularly active in the IEEE Information Theory Society, including co-founding its schools program in 2008 and serving as its president in 2013. His main accomplishments as president were expanding the schools program to Asia and Australia (there have been over 35 Schools of Information Theory on 6 continents since 2008) and establishing the James L. Massey Research & Teaching Award for Young Scholars. He was general co-chair of the 2017 IEEE International Symposium on Information Theory (ISIT) in Aachen, and TPC co-chair of ISIT 2008 and ISIT 2014 in Toronto and Honolulu, respectively. He served as Associate Editor for Shannon Theory for the IEEE Transactions on Information Theory from 2006-2008. He was an IEEE Information Theory Society Distinguished Lecturer from 2015-2016.

Gerhard Kramer was elected to the Bavarian Academy of Sciences and Humanities (Bayerische Akademie der Wissenschaften or BAdW) in 2015. He is a member of the BAdW Technology Forum, and of the selection committee of the BAdW Young Academy.

Since 2013, Gerhard Kramer serves as a member of the Board of Curators of the Eduard Rhein Foundation, an independent, non-profit foundation whose exclusive interest is to present monetary awards to individuals for achievements promoting the public welfare. Since 2016, he also serves as a mentor and selection committee member for the Max Weber Program for highly talented students enrolled at universities in Bavaria.