Chair of Communications Engineering

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Team

Research & Teaching Unit: LNT (Kramer) & LÜT (Hanik) & COD (Wachter-Zeh)
Topics: efficient, reliable and secure communications
Applications: wireless (5G), wireline (fiber-optic, DSL), biometric/device identification
Coding and Modulation for Industrial Applications

Long Codes for Optical
• New universal architecture & algorithms for shaping & coded modulation
• Awarded a 2015 Bell Labs Prize (3rd place of 250 ideas) & postdeadline at ECOC 2015
• Tremendous industry interest for optical fiber communication
  Reason: flexibility is key to improve network performance

Short and Medium-Length Codes for 5G (Wireless and Cyber-physical Systems) and Satellite
• Polar codes and LDPC codes are part of the 5G standard
• Improved list decoding for polar codes, short polar codes & shaping & modulation
• Moderate-length LDPC codes & shaping & modulation
• Short codes & shaping & modulation for satellite channels

\[ C = \log_2(1+\text{SNR}) \]