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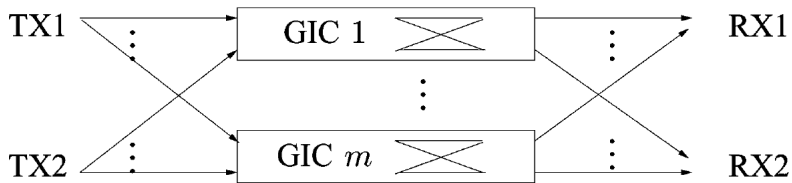
12 February, 2011

- Noisy-Interference Sum-Rate Capacity of Parallel Gaussian Interference Channels

Authors: X. Shang, B. Chen, G. Kramer, H. V. Poor

Affiliations: **X. Shang**: Bell Lab., Alcatel Lucent, USA, **B. Chen**: EECS, Syracuse University, Syracuse, USA, **G. Kramer**: Technische University Munchen, Germany and **H. V. Poor**: Department of EE, Princeton University, USA

- Sum rate capacity of the Parallel Gaussian Interference Channel (PGIC) is characterized
- They have addressed the following three issues
 - Whether the subchannels can be treated separately
 - What is the optimal distribution of the input signal
 - To find optimal power allocation across each subchannel



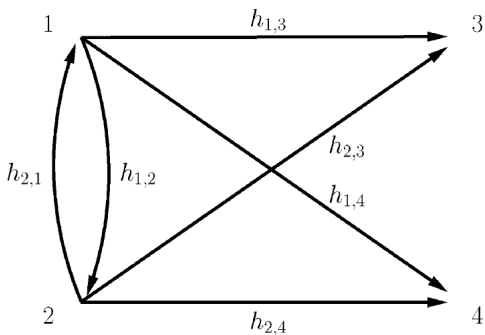
- When interference is weak, using independent signals and treating interference as noise maximum rate is achieved.
- No need of multiuser detector in this case

- Interference Channels With Source Cooperation

Authors: V. M. Prabhakaran and P. Viswanath

Affiliations: **V. M. Prabhakaran and P. Viswanath**: Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, USA

- Objective: To understand the role of cooperation in providing interference management gains
- Following simple wireless network is considered



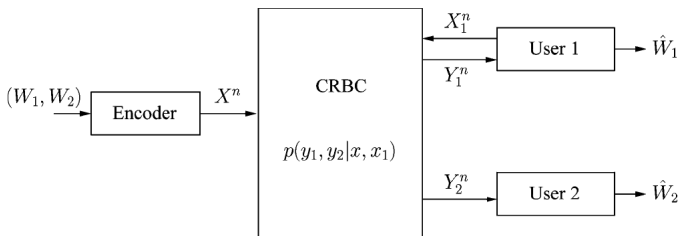
- Coding scheme : HK scheme with two more messages
 - Cooperative public message
 - Cooperative private message
- Initially, a deterministic model is used
- Results are then generalized for Gaussian case

- Secrecy in Cooperative Relay Broadcast Channels

Authors: E. Ekrem and S. Ulukus

Affiliations: **E. Ekrem and S. Ulukus**: Electrical and Computer Engineering,
University of Maryland, USA

- Goal: to study the effects of cooperation on the secrecy of multiple users
- Cooperaative relay Broadcast channel (CRBC) is considered
- Two ways of cooperation:
 - One - sided
 - Two - sided



- Achievable scheme is based on:
 - Marton's coding scheme for BCs
 - Cover and El Gamal's CAF scheme for relay channels
- User cooperation can increase the secrecy

- Sublinear Capacity Scaling Laws for Sparse MIMO Channels

Authors: V. Raghavan and A. M. Sayeed

Affiliations: **V. Raghavan**: Department of EEE, The University of Melbourne, Australia
A. M. Sayeed: Department of Electrical and Computer Engineering, University of Wisconsin-Madison, USA

- Multiantenna measurements have showed that large-antenna systems are sparse
- The focus is on understanding ergodic capacity scaling laws in sparse channels
- Sparsity of MIMO channels coupled with a knowledge of only the dominant DoF results in sublinear scaling of capacity