Journal Watch: Transactions on Communications, Oct 2012
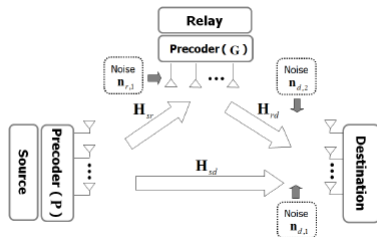**Sinchu P**
17 Nov 2012

The Global Optimality of the MIMO Cooperative System with Source and Relay Precoders for Capacity Maximization

Woonwoo Park, Hong-Yeop Song, Chungyong Lee
Yonsei University, S. Korea
Sungheon Jeong, *Samsung Thales*

The Global Optimality of the MIMO Cooperative System with Source and Relay Precoders for Capacity Maximization

- Each precoder design uses only its own effective channel
- Optimization by Lagrangian
- Iterative structure for global optimality
- Proves the mutual information is a concave function of the precoders

Efficient Spectrum Sensing for Cognitive Radio Networks via Joint
Optimization of Sensing Threshold and Duration
Ling Luo, *Electric Power Research Institute, Shanghai*,
Sumit Roy, *University of Washington, Seattle*

Efficient Spectrum Sensing for Cognitive Radio Networks via Joint Optimization of Sensing Threshold and duration

- Minimize the mean time to detection, s. t. P_{fa} and P_d constraints
- Jointly optimize the sensing threshold and the number of sensing samples
- Maximize the aggregate opportunistic throughput, s. t. P_{fa} and P_d constraints
- Proves biconvexity of the objective functions
- Suggests algorithms to solve the the biconvex problems
- Numerical results are presented

Weighted-Sum-Rate-Maximizing Linear Transciever Filters for the K-User MIMO Interference Channel

Joonwoo Shin, Jaekyun Moon,
School of EECS, KAIST, Korea

Weighted-Sum-Rate-Maximizing Linear Transciever Filters for the K-User MIMO Interference Channel

Maximize WSR by minimizing WMSE

- **a)sum-power-usage-limit constraint**
- **b)per-transmit node power-usage constraint**
- **Each transmitter use the local CSI**
- **Robust design for imperfect CSI**

Energy-Efficient Power Allocation for Pilots in Training-Based Downlink
OFDMA Systems

Zhikun Xu, Chenyang Yang
Beihang University, Beijing
Geoffrey Ye Li
Georgia institute of Technology, Atlanta
Shunqing Zhang, Yan Chen, Shugong Xu
Huawei Technologies, Shanghai

- Derive energy efficiency(EE) as a function of channel gains, allocated power to pilot and data and circuit power consumption
- Maximize EE, s. t. transmit power constraint
- Quasiconcave property
- trade off between EE performance and fairness among users, in multi-user scenario
- Improved EE performace with a small Spectral Efficiency loss