DISTRIBUTED JOINT TRANSMITTER DESIGN AND SELECTION USING AUGMENTED ADMM

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**ABSTRACT**

- Goal of this work is to design of network in which multiple transmission points (TPs) co-operatively serve users.
- TPs jointly precodes shared data which aims in improving overall system rate.
- TP designs local precoder and reaches consensus with other TPs on leaked interference.
- This approach is different as it solves a design problem that involves a coupling constraint which no existing algorithm is able to solve.

**PROBLEM FORMULATION AND REFORMULATION**

The problem formulated maximizing sum received signal power subject to instantaneous leakage interference and the transmit power constraint. TPs activation controlled by adjusting regularization term. $\mathbf{f}^* = \mathbf{E}_{i\in Q} \sum_{i,j \in Q} \|\mathbf{H}_i^* \mathbf{F}_j^*\|^2 - \alpha \|\mathbf{F}_i^*\|^2_g$. $\max_{\mathbf{Q}} \sum_{i,j \in Q} tr\left(\mathbf{H}_i^* \mathbf{Q}_j^* \mathbf{H}_j^*\right) - \alpha \|\mathbf{F}_i^*\|_1$, s.t. $\sum_{i,j \in Q} tr\left(\mathbf{H}_i^* \mathbf{Q}_j^* \mathbf{H}_j^*\right) \leq I_{th}$, $i \in I$, $i \neq j$. Use ADMM to further problem decomposed in 3:

**ADMM AUGMENTATION FOR COUPLING CONSTRAINT**

**PROPOSED ALGORITHM**

Algorithm 1: Distributed consensus optimization using proposed ADMM.

**SIMULATED ENVIRONMENT**

- # of TPs/UEs $Q = 7$, $K = 21$
- # of Antennas $n_T = 4$, $n_R = 2$
- $\tau = 10^{-3}$
- $\sigma^*$ $=-3$ dB
- PL exponent 3.76
- Shadowing 10 dB
- Tx antenna gain 10 dB

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**SYSTEM MODEL & NOTATIONS**

Assume the network consists of a set of TPs. Set of users should be served by subset of TPs, known as the cooperating set.

**KEY REFERENCES**


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**CONTACT INFO & ACKNOWLEDGEMENT**

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This work has been supported by the Ministry of Science and Technology Grants 107-2211-E-009-071, 108-2622-E-009-041 and Ministry of Education project RSC 107RSA0212.