Journal Watch
IEEE Transactions on Signal Processing
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Energy-Efficient Power Control: A Look at 5G Wireless Technologies

A. Zappone, L. Sanguinetti, G. Bacci, E. Jorswieck, and M. Debbah

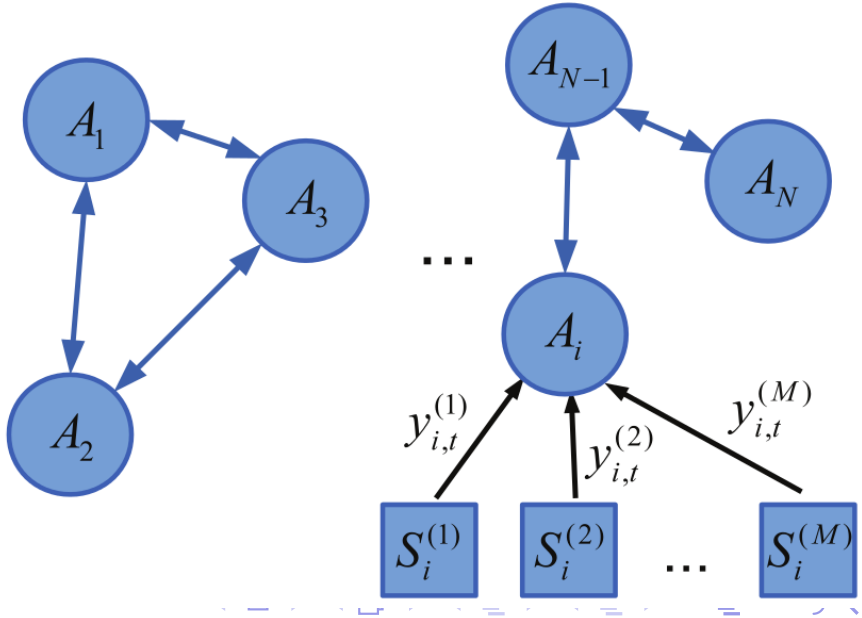
- Energy efficiency (EE) $\eta = \frac{\text{achievable rate over } N \text{ resource blocks}}{\text{circuit power dissipated+transmit power}}$
- **Two Formulations:**
  1. Network-Centric:
     - 1.1 GEE maximization: Maximize total energy efficiency
     - 1.2 Weighted min.-EE maximization: Maximize $\min_{k=1,2,\ldots K} w_k \eta_k$
  2. User-Centric: Maximize η_k, $k = 1, 2, \ldots, K$
- **Tools used:**
  - Fractional programming: maximize ratios with concave numerator, convex denominator and convex constraint
  - Sequential convex programming: find local optima using a proxy lower bounding convex function
  - Game-theoretic approach by finding Nash equilibrium

Distributed Bayesian Estimation of Linear Models With Unknown Observation Covariances

Y. Wang and P. M. Djurić

- **Goal:** Estimation of a time invariant vector $\boldsymbol{\theta}$ in a network of cooperative agents
- **Measurement model:** $y_{i,t} = \boldsymbol{H}_{i,t}\boldsymbol{\theta} + w_{i,t};\ w_{i,t} \sim \mathcal{N}(\mathbf{0}, \boldsymbol{\Sigma}_i)$
- **Bayesian Approach:** inverse-Wishart distribution on noise covariance $\boldsymbol{\Sigma}_i$ and Gaussian distribution on $\boldsymbol{\theta}$

- **Contributions:**
  - Consensus-based solution for the agents to reach the belief of a fictitious fusion center
  - KL divergence bw the beliefs of the agents and the fusion center $\rightarrow 0$.

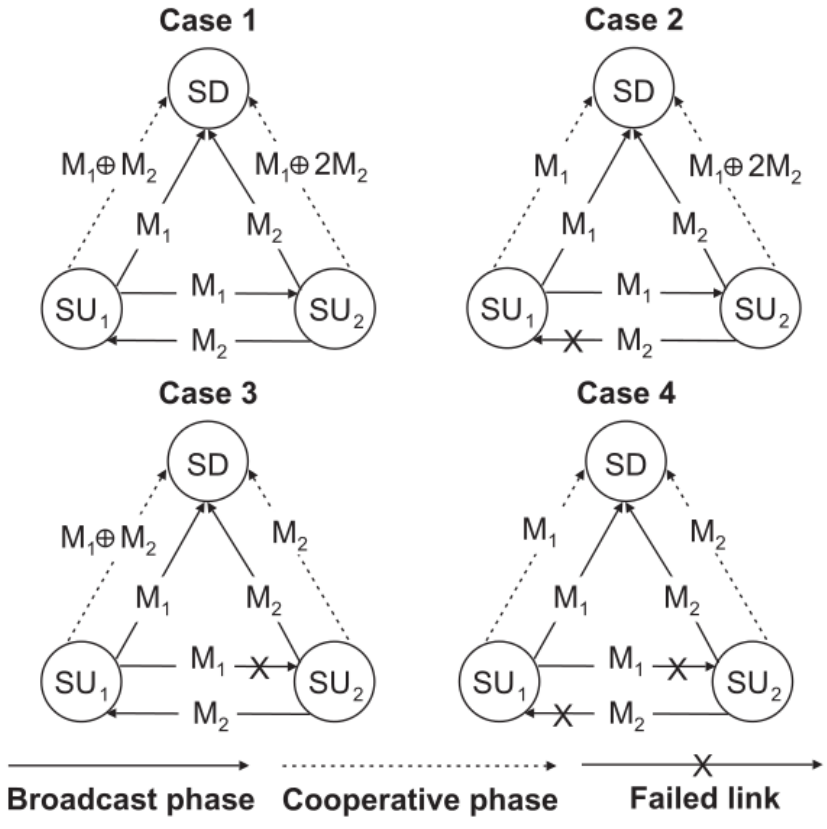


Energy Efficient Power Allocation Schemes for a Two-User Network-Coded Cooperative Cognitive Radio Network

R. Bordón, S. M. Sánchez, S. B. Mafra, R. D. Souza, J. L. Rebelatto and E. M. G. Fernandez

Signal Model: Signal from SU + signal from PU + noise

Goal: Min. the total tx. power subject to performance constraints



Scheme 1:

- Based on statistical channel parameters
- Obatin a given outage probability
- Convex optimization

Scheme 2:

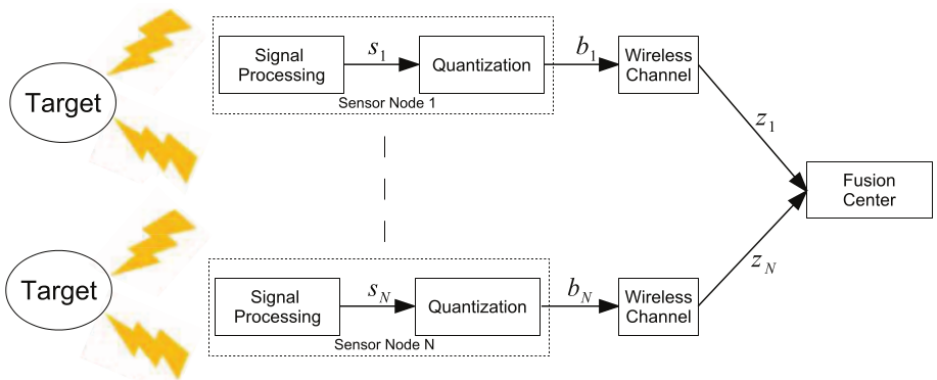
- Based on instantaneous CSI
- Ensure a given tx. rate
- Closed form expressions

A Bayesian Perspective on Multiple Source Localization in Wireless Sensor Networks

T. L. T. Nguyen, F. Septier, H. Rajaona, G. W. Peters, I. Nevat and Y. Delignon

- **Goal:** Localize unknown number of transmitters
- **Measurement model:** $s_i = \sum_{k=1}^{K} P_k^{1/2} \left(\frac{d_0}{d_{i,k}} \right)^{\eta/2} + n_i$
- **Bayesian Approach:** normal distribution on source location and inverse gamma distribution on source power

- **Contributions:**
  - Algorithm using Sequential Monte Carlo methods
  - Posterior Cramér–Rao bound of the source location estimate



Other Papers

- **Consensus Algorithms With State-Dependent Weights**
  - Ondrej Slučiak and Markus Rupp
- **Decentralized Linear Transceiver Design and Signaling Strategies for Sum Power Minimization in Multi-Cell MIMO Systems**
  - Harri Pennanen, Antti Tölli, Jarkko Kaleva, Petri Komulainen, and Matti Latva-aho
- **Multiple Extended Target Tracking With Labeled Random Finite Sets**
  - Michael Beard, Stephan Reuter, Karl Granström, Ba-Tuong Vo, Ba-Ngu Vo, and Alexander Scheel
- **Closed-Loop Compressive CSIT Estimation in FDD Massive MIMO Systems With 1 Bit Feedback**
  - Vincent K. N. Lau, Songfu Cai, and An Liu