Journal watch: IEEE Transactions on Wireless Communications - Feb 2018

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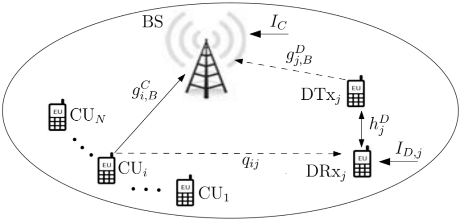
Goal: Mode selection, user scheduling and rate adaptation with partial CSI model

System Model:



- Channel model: Channel gain $q_{ij} = K\beta_{ij}d_{ij}^{-\alpha}$
- Discrete rate adaptation model
- D2D modes description:
  SINR of D2D: $\Gamma_i^{UM} = \frac{P_D h_j^D}{P_C q_{ij} + I_{D,j} + \sigma^2}$
  SINR of CU: $\gamma_i^{UM} = \frac{P_C g_{i,b}^D}{P_D g_{j,b}^D + I_C + \sigma^2}$

Instantaneous throughput T$=m_1[\sum_{i=1}^{N} x_i{}^{UM}(\sum_{l=1}^{L} z_l^C(i,j) r_l^{\mathbf{1}} \gamma_j^{UM}(i) > \lambda_l]$

Contributions:

- Cross-link interference statistics-aware adaptation scheme (CLISAA)
- CLISAA is driven by feedback-conditioned goodput of each MCS

Traffic-Aware Energy-Saving Base Station Sleeping and Clustering in Cooperative Networks

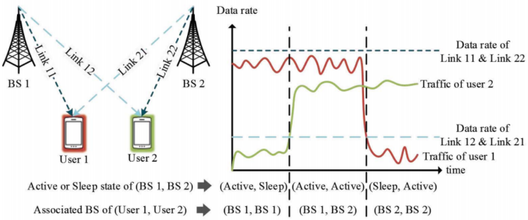
Jihwan Kim, Hyang-Won Lee, Song Chong

Goal: Develop a new traffic aware algorithm without additional information of traffic arrivals

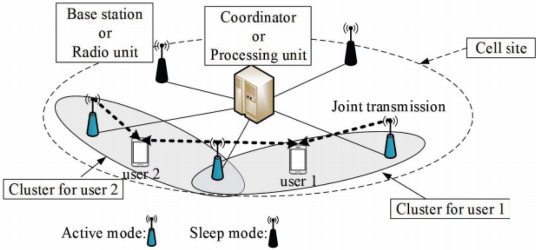
Contributions:

- Formulation of joint base station clustering and sleeping problem for minimizing energy consumption while guaranteeing network stability
- Development of an optimal clustering algorithm with polynomial complexity, for a given BS sleep station
- Development of a joint optimal BS sleeping and clustering algorithm that solves the challenging combinatorial sleeping and clustering problem with reduced complexity compared to exhaustive search

System Model:



(a) Traffic adaptation in ideal case



System Model:

- Consider a cooperative wireless network consisting of a set S of disjoint cell sites
- Consider a set of B_s Base stations and set of K_s users

$$B = \bigcup_{s \in S} B_s \tag{1}$$

$$K = \bigcup_{s \in S} K_s \tag{2}$$

where B is whole Base station set and K is the whole user set

$$\delta = [\delta_b, \forall b \in B] \quad (3)$$

where δ_b : sleep mode indicator of BS

- Achievable data rate:

$$\gamma_k = Blog_2(1 + \frac{\sum_{b \in B_{s(k)}} G_{bk} P_{bk}}{I_k(\delta, p) + N_k}) \quad (4)$$

where B: system Bandwidth

N_k: Noise power of user k

I_k: interference from other cell

Downlink Resource Allocation Under Time-Varying Interference: Fairness and Throughput Optimality

Ravi Kiran Raman, Krishna Jagannathan

Goal: Proposition of resource allocation policy in presence of time varying interference

System Model:

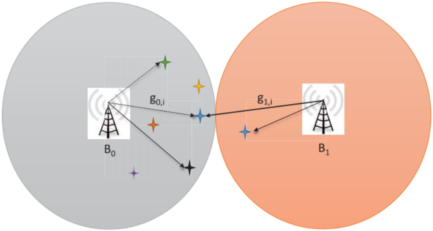


Figure: Base station layout: User equipment experience interference from transmission of neighboring Base station

System Model:

- Frequency-flat block fading channel offering constant fading gains to user equipment over a block size of M slots is considered
- Rayleigh fading considered for all channels

Channel quality information:

$$\gamma_i(t) = \frac{g_{0,i(t)P_0(t)}}{N_0 + g_{1,i}(t)P_1(t)} \tag{5}$$

where N_0: average AWGN power for the channel

Channel capacity:

$$C_i(t) = log_2(1 + \gamma_i(t)) \tag{6}$$

Contributions:

- Resource allocation policy that can stably support the largest possible set of traffic rates under the interference scenario is proposed

Other Interesting Papers

- Distributed Resource Allocation in SDCN-Based Heterogeneous Networks Utilizing Licensed and Unlicensed Bands
- Hybrid LISA Precoding for Multiuser Millimeter-Wave Communications
- Cache-Enabled Physical Layer Security for Video Streaming in Backhaul-Limited Cellular Networks
- Performance Analysis of Near-Optimal Energy Buffer Aided Wireless Powered Communication
- Secure Transmission in Linear Multihop Relaying Networks
- Blind Channel Estimation and Symbol Detection for Multi-Cell Massive MIMO Systems by Expectation Propagation