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- **Energy-Efficient Resource Allocation for Downlink Non-Orthogonal Multiple Access Network**

  Authors: F. Fang, H. Zhang, J. Cheng, and V. C. M. Leung

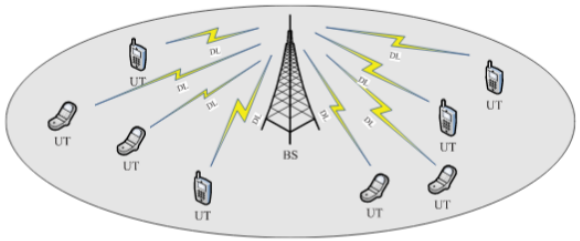
Goal: To maximize the energy efficiency of downlink NOMA by optimiz

System Model

(1) Downlink NOMA

(2) SIC is equipped at UTs

(3) Perfect CSI at BS



Objective

$$\max_{p_n>0} \sum_{n=1}^{N} \frac{R_n(p_n)}{p_c + p_n}$$

$$s.t. \begin{cases} R_{l,n}(p_n) \geq R_{min} \\ \sum_{n=1}^{N} p_n = P_s \end{cases}$$

Contribution

(1) Formulated the subchannel assignment

and power allocation to maximize energy efficiency

(2) Above problem is NP-hard. So, decoupled the two problems

Transformations:

- Subchannel assignment: assumed equal power allocation across subchannels and posed as two sided matching problem.
- From the above channel assignment, calculates power allocation to maximize energy efficiency.
- Used DC programming to solve power allocation problem.

- **Reconfigurable Antenna-Based Space-Shif t Keying for Spectrum Sharing Systems Under Rician Fading**

  Authors: Z. Bouida, H. El-Sallabi, M. Abdallah, A. Ghrayeb, and K. A. Qaraqe

Goal: To study the implementation of SSK-RA within underlay cognitive radio systems

System model:

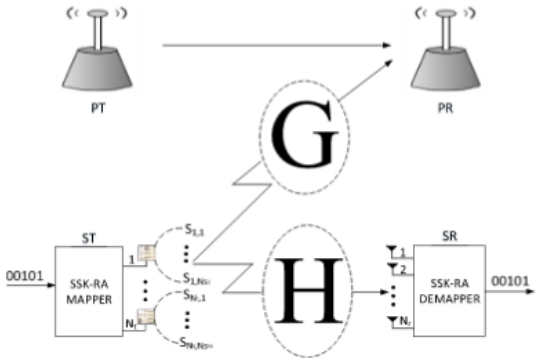
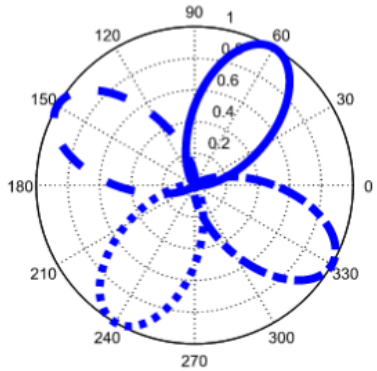


Fig. 3. System model of SSK-RA in a spectrum sharing scenario. **H** and **G** are the channel matrices for the secondary and interference links, respectively.



1. Radiation states for different beam directions.

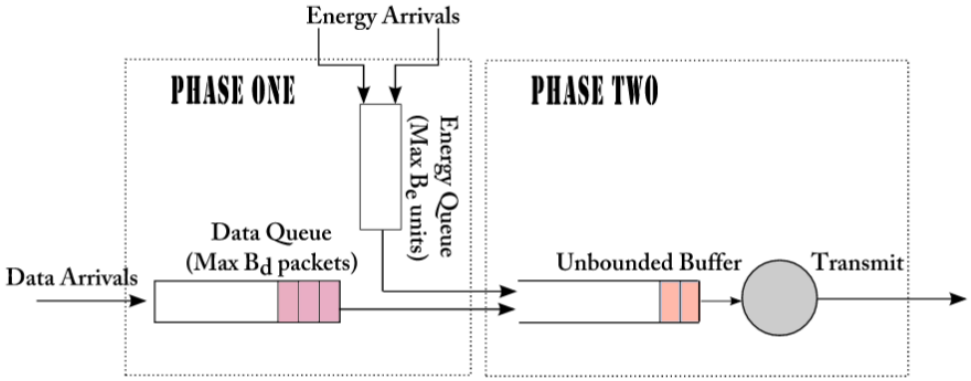
Contribution:

- Derived the correlation model different antenna states
- Combined RAs with SSK to create the scenario of spectrum sharing.
- Proposed schemes for minimizing complexity of spectrum sharing systems under PU constraint set and BER performance of SU
- Considered Rician channels with low K-factor, and proposed state selection variation.
- Analyzed the BER performance of above proposed schemes.

- **Diphase: Characterizing Packet Delay in Multi-Source Energy Harvesting Systems**

  Authors: A. Tandon and M. Motan

Goal: To analyze average packet delay and probability of packet loss in Diphase system model
System Model:



Contribution:

- Devised two phase queueing formulation
- Derived closed form expression for average packet delay and probability of packet loss due to buffer overflow
- Derived standard deviation of delay for Diphase system
- Compared similarities to physical queueing system.
- Shown that above derived expression are useful in making decisions which improves throughput while meeting QOS constraints.

Some interesting papers:

- Low Complex, Narrowband-Interference Robust Synchroniza tion for NC-OFDM Cognitive Radio...
  P. Kryszkiewicz and H. Bogucka
- Optimal Energy-Efficient Joint Resource Allocation for Multi-Hop MIMO-AF Systems . . . . . .
  F. Hliot and R. Tafazolli