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Adaptive Sparse Channel Estimation under Symmetric alpha-Stable Noise

K. Pelekanakis and M. Chitre,
National Univ. Of Singapore

- K-tap channel model, Rx. noise is SαS distributed (impulse-like)
- Adaptive online algorithms to estimate channel coeff.
- RLS-type
  - Cost-function=loss-func. + l-0 norm constraint
  - Loss func. considers higher penalty on large errors
- Natural Gradient
  - Cost-function=loss-func. + dist(h[n],h[n-1])+l-0 norm constr.
- NG-type algo. is superior to RLS-type

On the Physical Layer Security of Backscatter Wireless Systems

Walid Saad, Univ. of Miami
Xiangyun Zhou, Australian Nat. Univ.
Zhu Han, Univ. of Houston
H. Vincent Poor, Stanford Univ.

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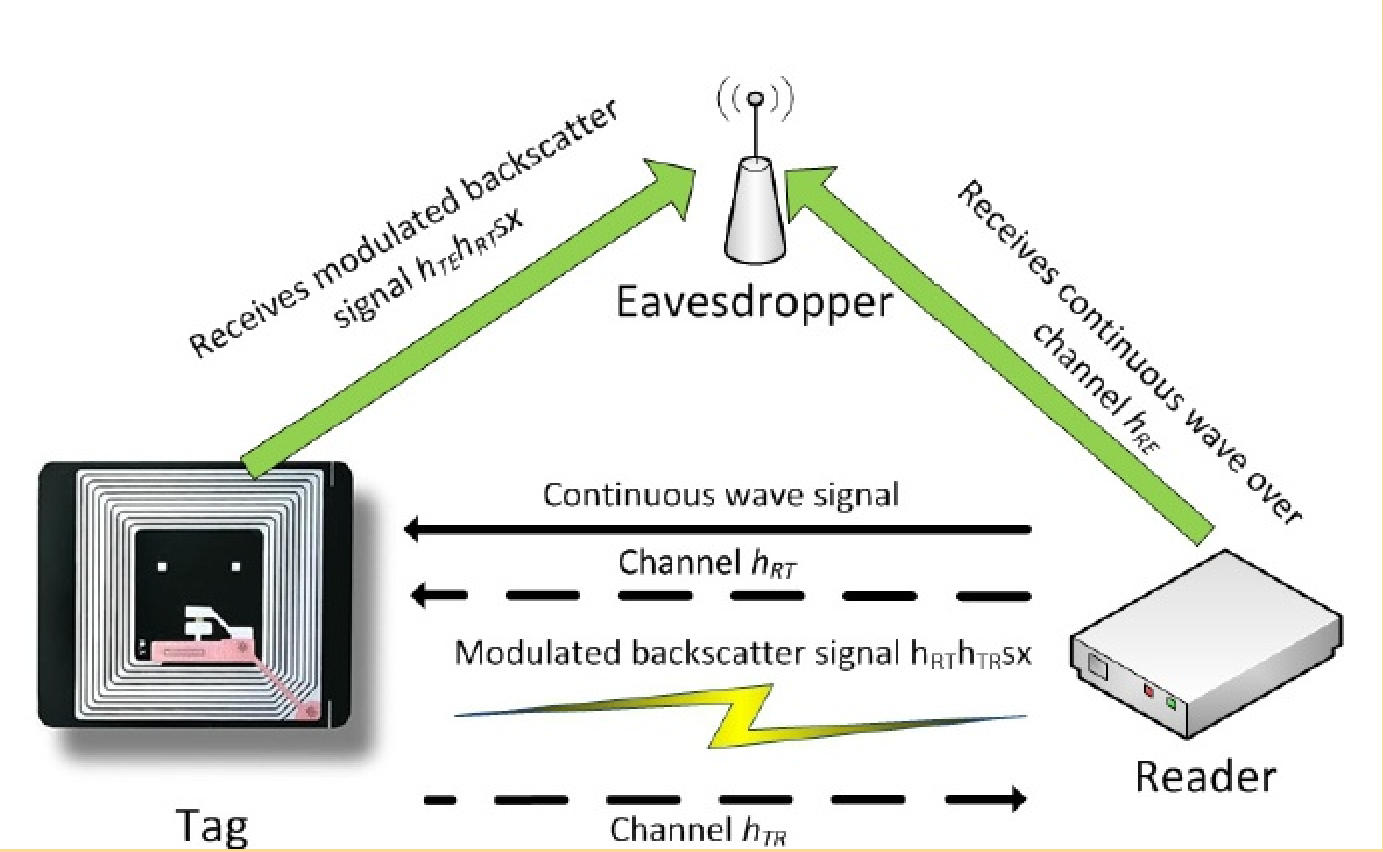
Backscatter wireless systems (Eg. RFID systems)



- Literature: light-weight cyptography
- Physical layer secrecy: Inject noise on the CW signal, causing interference to eaves dropper (Txr will divide power bwn. CW signal and noise)
- Derives secrecy rate for single Reader-tag system
- Derives condition under which the positive secrecy rate can be achieved
  - Eg: If Eavesdropper is very close to tag, it is not possible to maintain secrecy under Txt. Power constraint

Sensing or Transmission: Causal Cognitive Radio Strategies with Censorship

Kasra Haghighi, Erik G. Strom, and Erik Agrell
Chalmers Univ. of Tech., Sweden

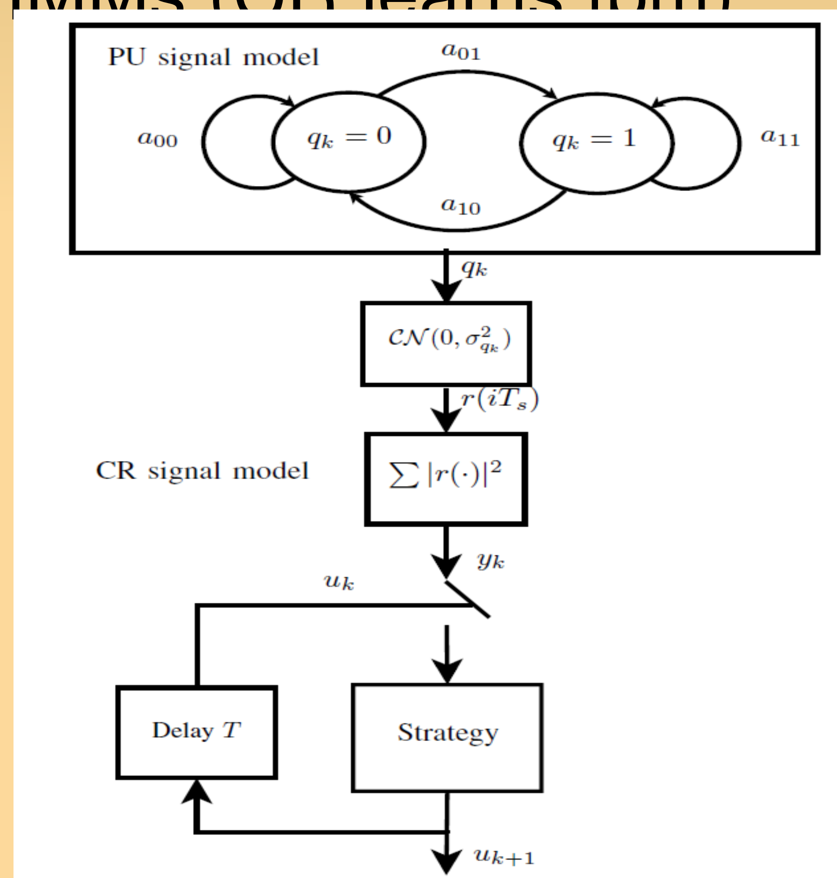
Single Primary Txr., and a single Cognitive radio link

Primary activity is slot synchronised

Primary activity is modeled by HMMs (CR learns tpm)

In a slot, either CR senses

or transmits



- In previous work, APP for simultaneous sensing and access

Contributions

- Provide a scheme to evaluate LLR by using censored observations (CLAPP)
- LLR is a function of previous observations and PU HMM

Large Overlaid Cognitive Radio Networks: From Throughput Scaling to Asymptotic Multiplexing Gain

Armin Banaei, Costas N. Georghiades, and Shuguang Cui
Texas A&M Univ.

- Gupta & Kumar: sum throughput for a n/w with uniformly and independ. distibuted λ nodes (time slotted multi-hop commun.) scales as $O(\sqrt{\lambda}/\log(\lambda\ )$
- Literature: In an underlay network, both primary and CR network achieve throughput scaling without outage
- Overlay n/w: A primary n/w where nodes are PPP distributed with density λ and CR nodes are PPP distributed with density λ^{β}
- CR nodes perform spec. sensing by considering a sensing radius (perfect sensing with in the radius)
- New metric: Asymptotic multiplexing gain (AMG)
- Derives Throughput scaling with CR n/w satisfying AMG requirement of Primary n/w
  - Denser CR network and sparser CR network
  - For $\beta > 1$, CR n/w can achieve good throughput performance, whereas for