RUTGERS
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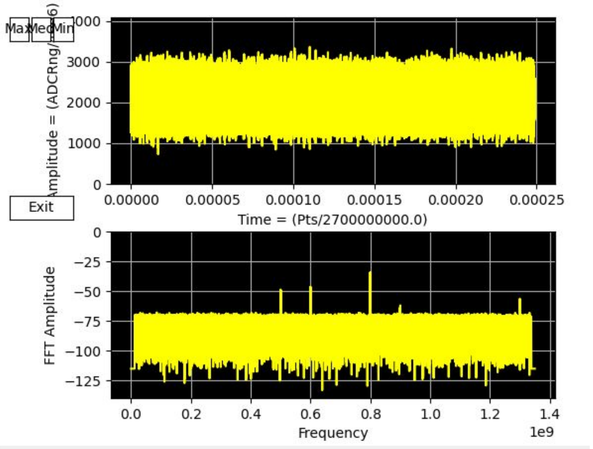
Low Probablity of Detection Signals

Goals/Overview

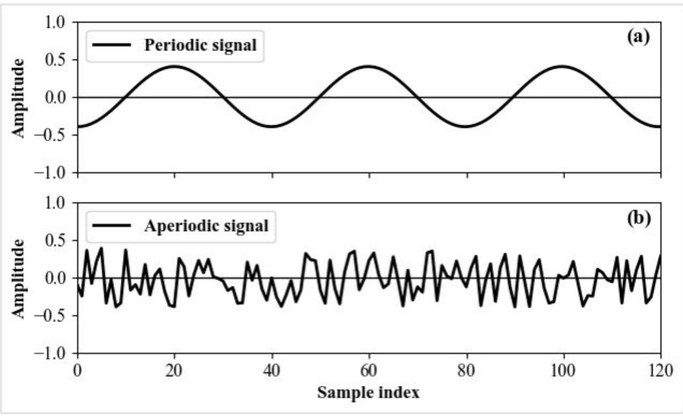
- Test effectiveness of 3 node CDMA at maintain secrecy
- Test against a sophisticated adverasery using DCS and energy detection
- Work to find ways to avoid these detection schema

LPD/LPCD

- Low probablity of detection signals refers to signals able to avoid energy detection
- Increasing the bandwidth hides the signal in the noise

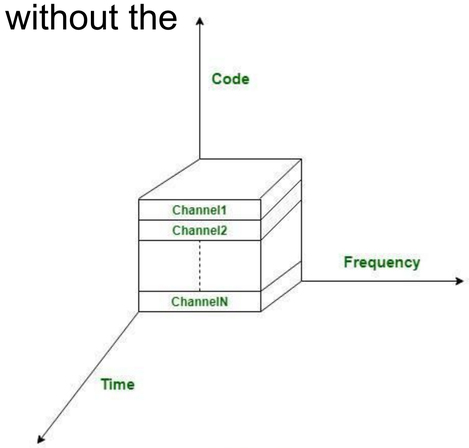


- Low probability of cyclic detection refers to signals that avoid cyclostationarity detection
- Cyclostationarity detection identifies the periodic repetitions in signals that noise lacks



CDMA

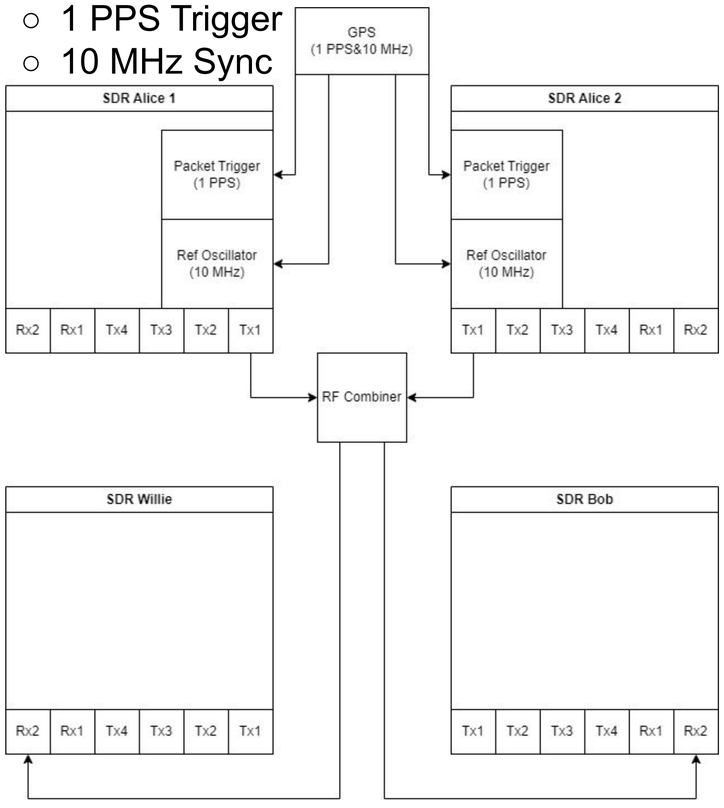
- Uses orthogonal codes to achieve results
- Very good for secrecy
  - Easy to hide in noise
  - Hard to decfier without the original code



CDMA

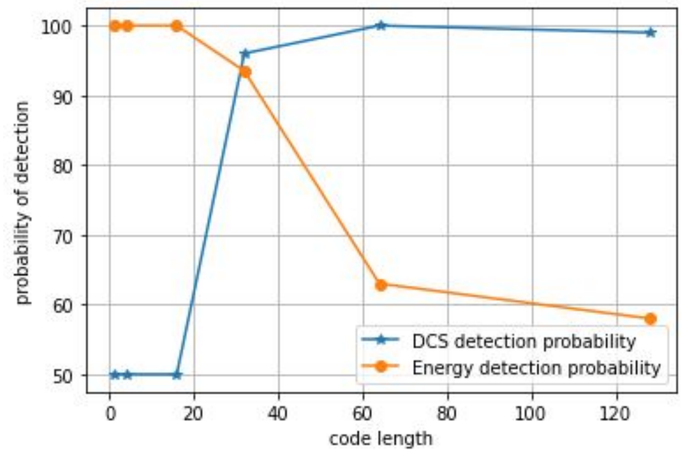
Experiment Setup

- Two friendly transmitters (Alices)
- One receiver playing the part of both Willie and Bob(shown as two in the image for clarity)
- GPS Signal
  - 1 PPS Trigger
  - 10 MHz Sync

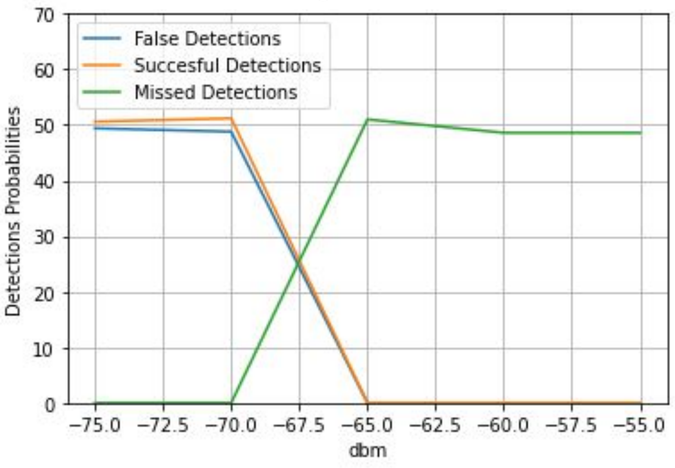


Results

- DCS uses periodic repetitions to identify signals so longer bandwidths are better for DCS
- Increased bandwidth decreases power at any given point making energy detection harder



- Large bandwiths can avoid energy detection
- The detection probability in this case never goes above 50%
- With the large bandwidth no detection threshold can detect this signal



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