

Strengthening Wi-Fi Network Wide



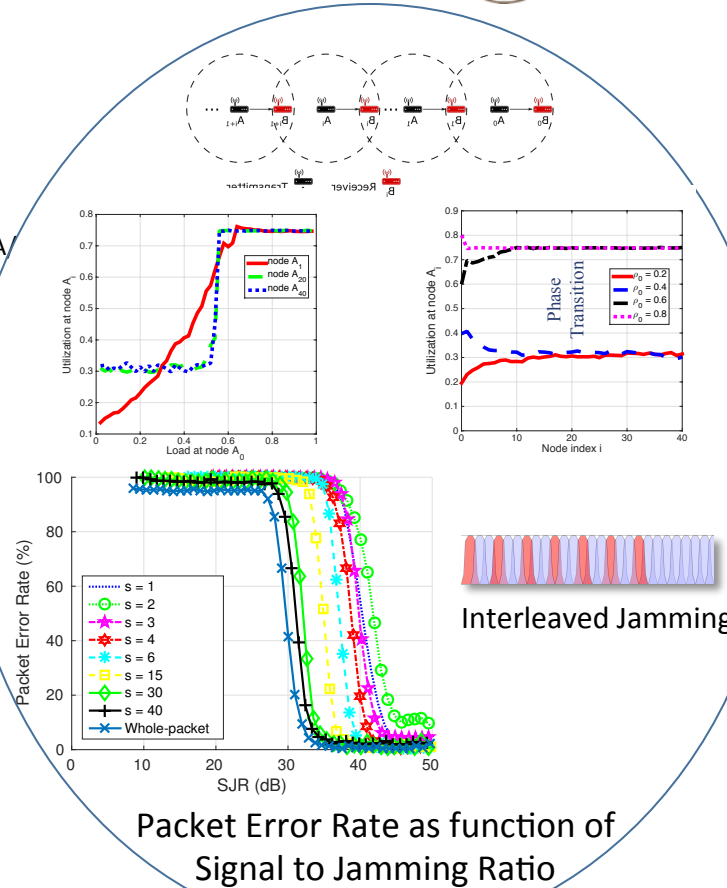
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Challenge:

- Investigate the resiliency of Wi-Fi networks to smart attacks at PHY/MAC/Network
 - Orders of magnitude more efficient than state of the art
 - Exploit weaknesses in OFDM, MIMO, CSMA/CA, Global Network
- Design, develop, and evaluate mitigations

Solution:

- Discovered Interleaved Jamming attacks achieving 40dB gain for adversary
- Discovered interference coupling phenomena that leads to a network-wide cascading and lasting congestion



Scientific Impact:

- Deep understanding of threats facing Wi-Fi along several dimensions, via experiments and analysis
- Mitigation techniques and algorithms to strengthen existing Wi-Fi networks and emerging standards

Broader Impact:

- Implementation into open-source software that can be deployed on wireless network cards and access points
- Security training of the next-generation of scientists and engineers involved in radio design and deployment.

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