

Towards Stealth Networks

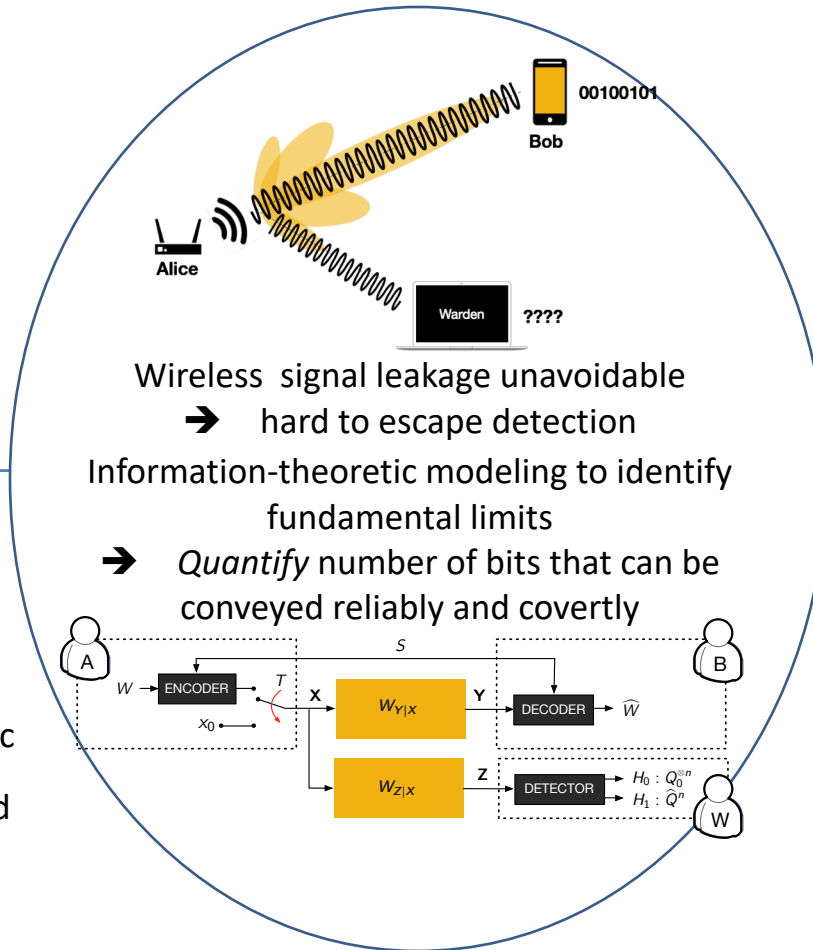
Fundamental Limits and Algorithms for Stealth Communications

Challenge:

- Characterize information-theoretic limits of covert communications for classical and quantum channels
- Develop provably undetectable communication schemes

Solution:

- Exploit low-weight codebooks, with codeword weight scaling a *square root* of block length
- Exploit information-theoretic techniques to control channel output statistics and hide structure



Scientific Impact:

- New insights into design of schemes with low probability of detection, potentially *without* share secrets
- Highlights dual role of error-control codes, to ensure reliability and *shape* statistics of transmitted waveforms

Broader Impact:

- New techniques to avoid detection by monitoring entities
- Applications to spectrum sharing by designing undetectable secondary users

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