

# Wireless Security in Random Networks

## Motivation

- ▶ IoT paradigm
- ▶ Traditional Security System
- ▶ Physical Layer Security

## Objectives

- ▶ Analyse the limits and the capabilities of Lower Layer Security in IoT
- ▶ To develop the tools that can be used for security analysis
- ▶ Implementation of techniques for secure communications in physical layer

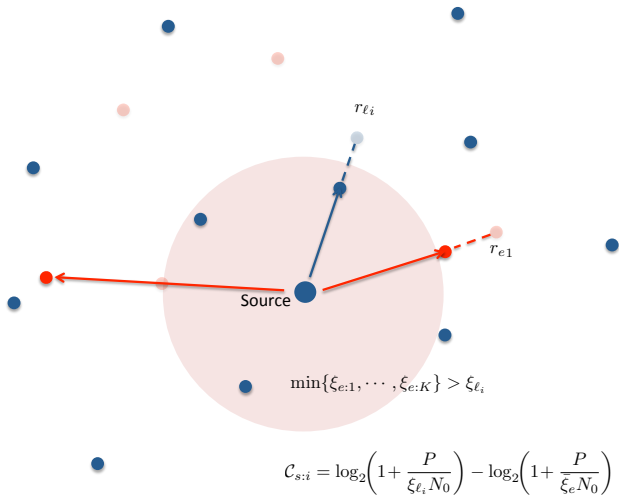
**Wireless Security + Large Scale Network**

# What we do w.r.t current needs

## Research done so far (our contributions)

- ▶ Building information-theoretical based geometrical frameworks to analyse **security in communication networks**.
- ▶ Dynamic **secret key generation** schemes for short range communications (NFC). (early stage)
- ▶ Cooperative ARQ protocols evaluation - PHY Security

# Secrecy Graph in Fading



# Open questions

- ▶ The communication between nodes depends on locations of other nodes.

**Location uncertainty is captured by our model.**

- ▶ Recent literature do not provide network throughput under secrecy.

**Our approach gives opportunity to analyze **network throughput**.**

- ▶ Scaling laws do not consider the impact of key system parameters.

**We consider the density of nodes, fading, location of nodes, **correlation, collusion**...etc.**