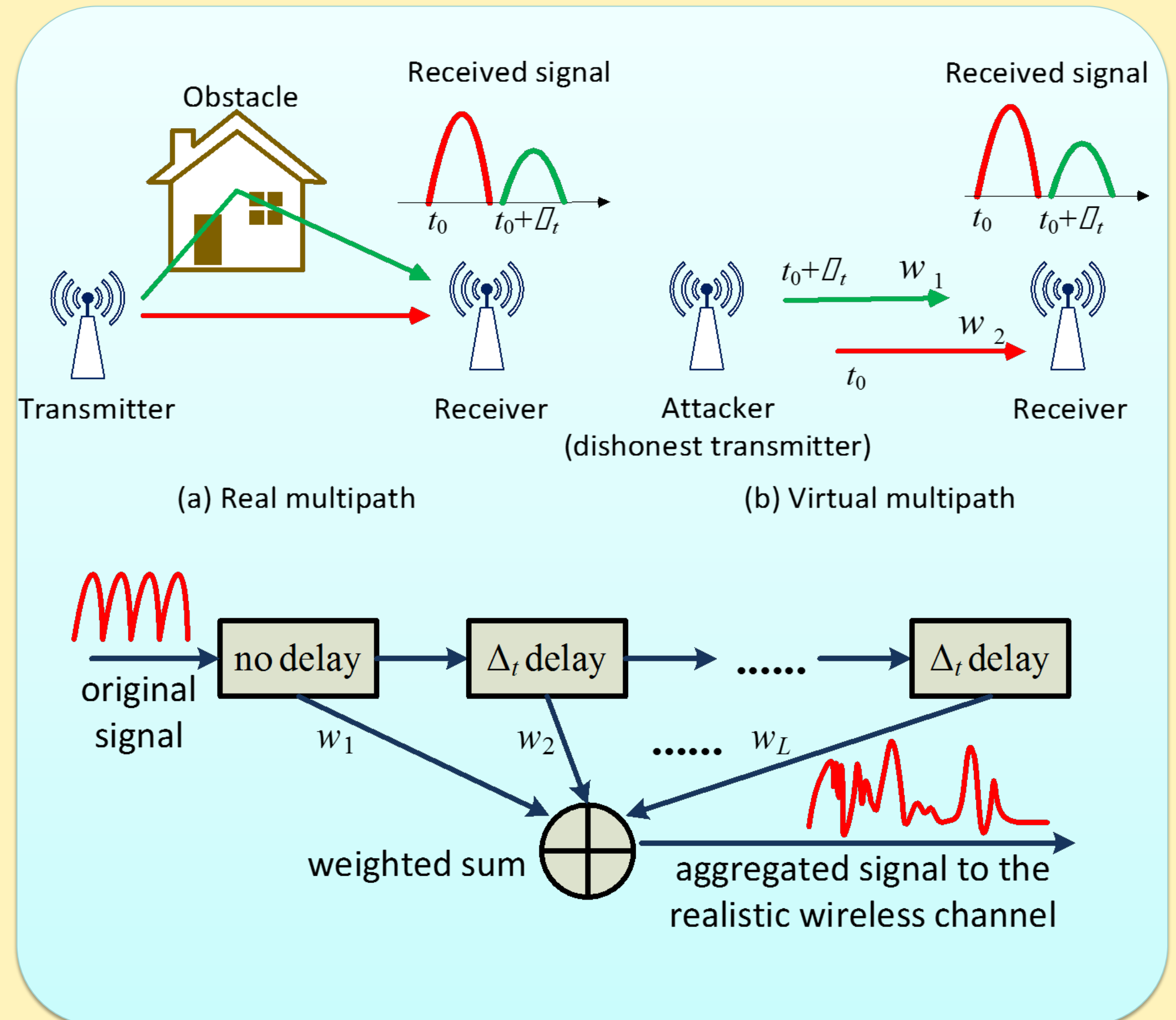


Project Objective

Wireless channel exhibits the spatial uncorrelation property, which fertilizes an emerging research area that utilizes the wireless channel characteristic to enable conventional security functions like authentication and location distinction.

Due to the prevalence of applying spatial uncorrelation property for wireless security, an important question will be naturally raised. What will happen if this property is compromised? The answer to this question will impact wireless security in fundamental ways.

Our investigation reveals that an attacker can generate any fake wireless channel characteristic at a target receiver to deteriorate the location distinction capability of the receiver or impersonate another wireless transmitter.

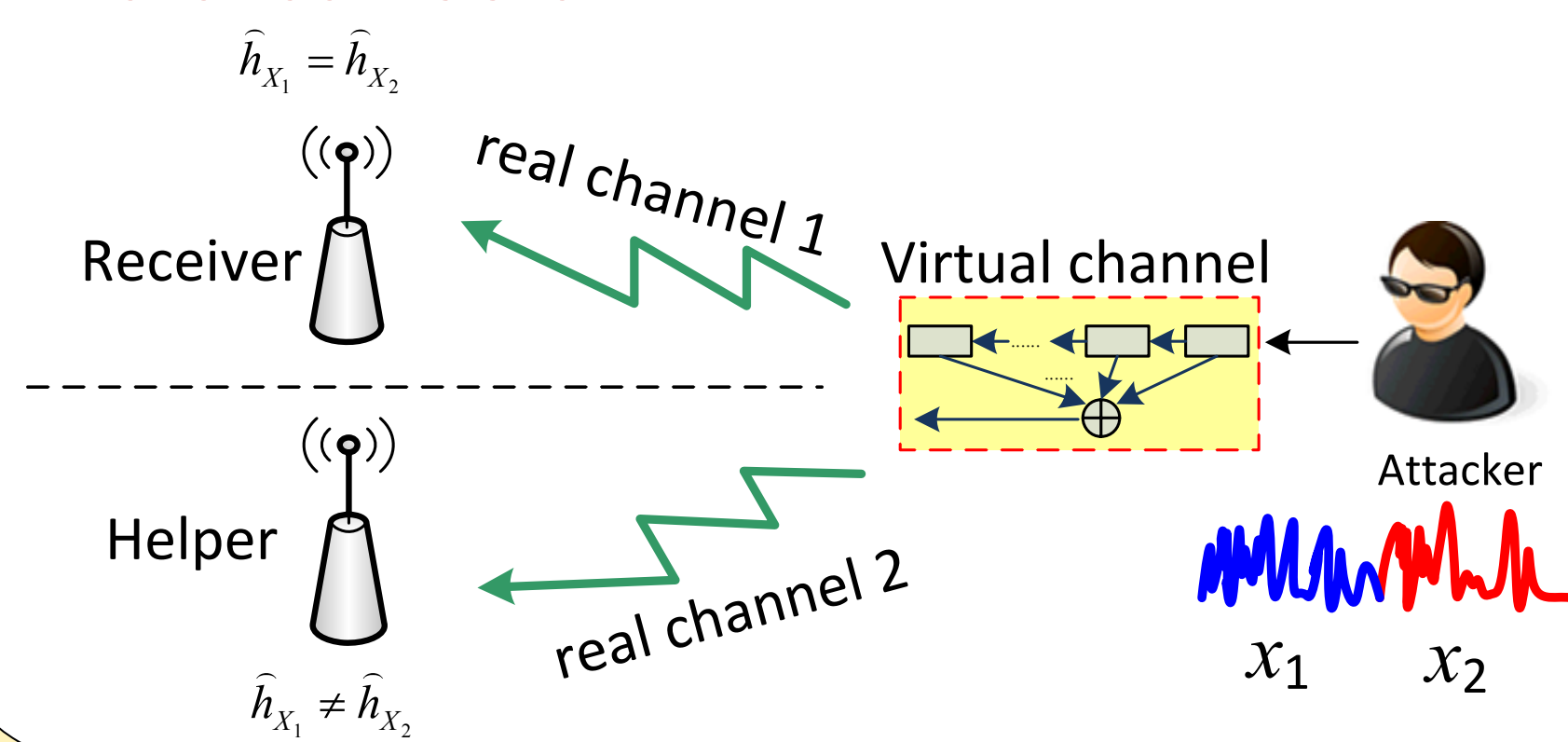


Approach

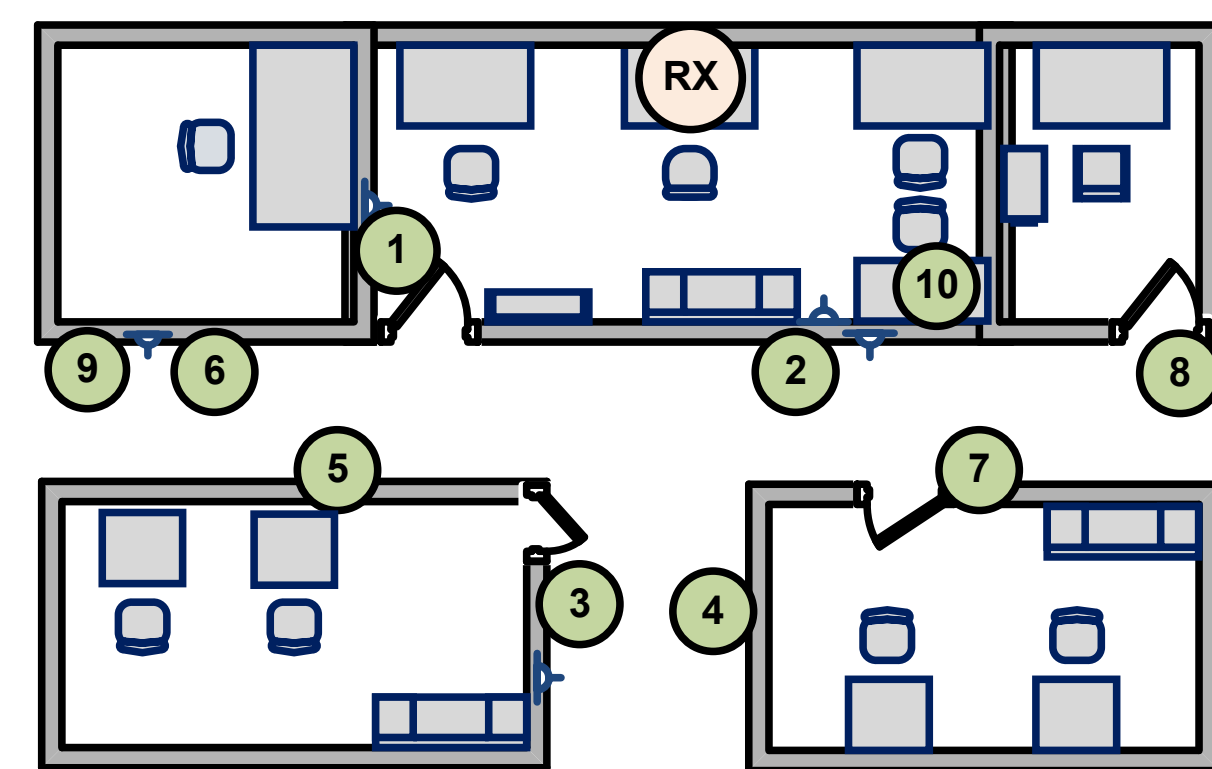
The key idea of the discovered attack is to create a virtual multipath channel as undetectable camouflage to make the receiver believe a specified channel characteristic chosen by the attacker.

The virtual multipath channel technique serves as the underlying method to break the uniqueness of the wireless channel characteristic and advance the existing design and applications in wireless security.

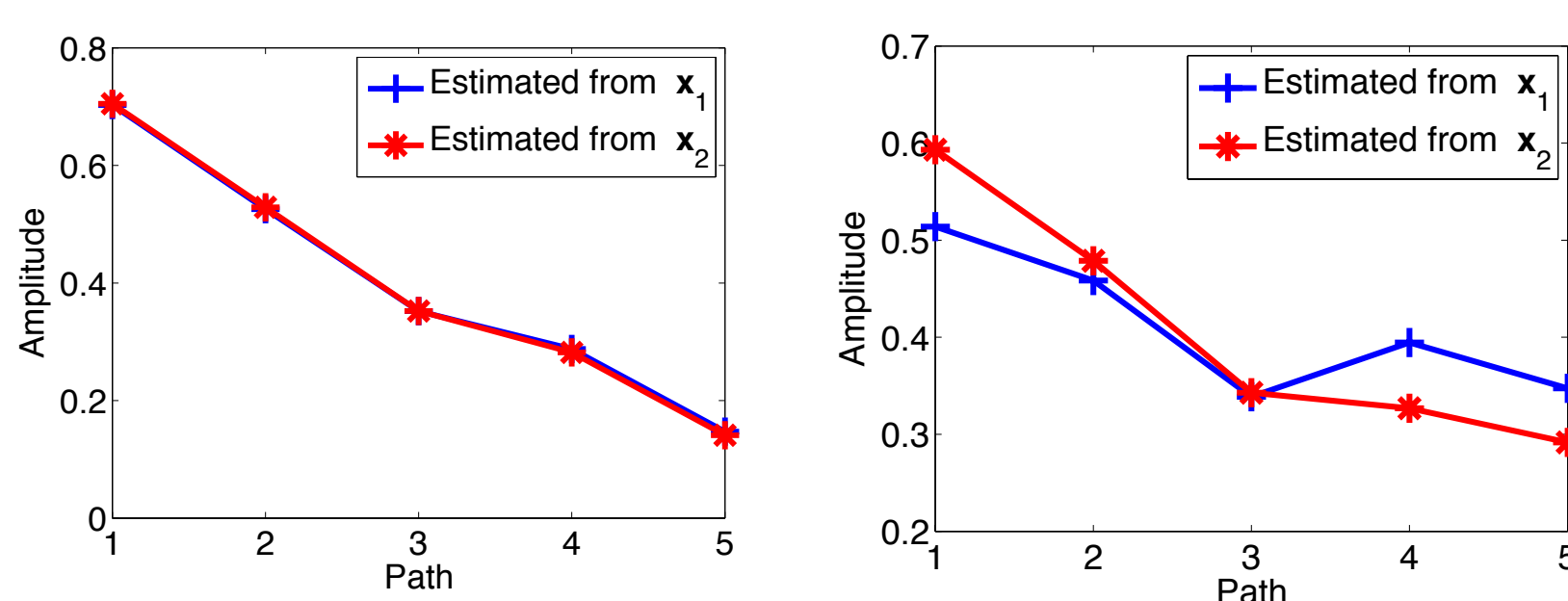
Defense Tools



Attacks and Defense Evaluation



Evaluation Results



Attacks against OFDM systems

Our investigation found that the attack in OFDM systems cannot be detected by the regular defense. We are seeking alternative ways to close the loophole of the regular defense and protect OFDM systems.

Interested in meeting the PIs? Attach post-it note below!