

# Dominance-Based Wireless Communication and Associated Solutions

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## **Traditional wireless communication methods can require too many transmitting devices**

Conventional methods of wireless communication such as mobile, Bluetooth, broadcast radio, and wi-fi are common and frequently preferred to wired connections. Although these conventional methods are effective, these systems require separate and multiple transmitting devices and can be inconvenient due to loss performance, latency of data reception, lower network throughput, and the number of devices necessary.

Researchers at the Georgia Institute of Technology are developing a new a method of wireless communication that lessens the need for multiple channels and time durations, by creating a system where many transmitters can simultaneously transmit and increase network throughput.

## **A dominance-based communication protocol that prevents waste of communication resources**

The invention is a new wireless communication technique based on the concept of dominance. When two signals are simultaneously transmitted, the receiver favors one of the signals causing the receiver to decode only the dominant signal. The main mechanisms are the collection of information and coding to ensure the data patterns transmitted from multiple senders are dominance compatible. The supporting mechanisms handle the timing and carrier frequency offsets between transmitters.

### **Summary Bullets**

- A new method of wireless communication has lessened the need for multiple channels and time durations, by creating a system where many transmitters can simultaneously transmit and increase network throughput.
- This new system yields higher spatial reuse, reduces the latency of data reception, and improves loss performance and can be used in most wireless network scenarios.
- The dominance based technique uses collection of information coding, and other supporting mechanisms in order to prevent the waste of communication resources.

Solution Advantages

- Allows many transmitters to simultaneously transmit through one channel to increase productivity.
- Yields higher spatial reuse and higher network throughput.
- Reduces the latency of data reception and improves the loss performance.
- Decodes collided data to result in successful data transmissions.

#### Potential Commercial Applications

- All Network Scenarios
- WLANs
- Wireless Mesh Networks
- WPANs

#### Inventors

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#### IP Status

<p>Patent has issued</p>: US8179841B2

#### Publications

[Symbiotic Coding for High-Density Wireless LAN](#), IEEE Explore: Transactions on Mobile Computing - 2013

#### Images

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