

# Wideband Transceiver for Antenna Array

View U.S. Patent No. 9,444,532 in PDF format.

WARF: P150113US01

Inventors: Akbar Sayeed, John Brady

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in improving the performance of wideband communications using a relatively simple design.

### Overview

Wideband high-dimensional antenna arrays are expected to play a key role in future wireless systems. Due to narrow bandwidths, phased array/beamforming methods are the natural choice when it comes to designing multiple-input, multiple-output (MIMO) antenna systems. However, these methods are inadequate as bandwidth and array dimensions increase. In particular the well-known problem of "beam-squint" in which the beam direction changes with frequency can cause very significant degradation in performance.

#### The Invention

UW-Madison researchers have developed a hardware/software-based solution. Their new method quantifies and corrects degradation due to beam-squint, and introduces several small design changes to beamspace MIMO (B-MIMO) systems.

The researchers identified a channel dispersion factor that can be used to quantify the severity of the problem and to select the beams for maximum performance.

## **Applications**

- Emerging millimeter-wave technology for gigabit backhaul and mobile access
- · Emerging satellite communications applications

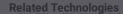
# **Key Benefits**

- · Improves performance
- · Outperforms other designs
- · Maintains channel power
- · Eliminates pulse distortion
- · Could be incorporated into existing phased array designs with relatively minor modifications
- Also applicable to new technologies for multi-beamforming, such as continuous aperture phased MIMO (CAP-MIMO)

## Stage of Development

Simulations and calculations show this method should work as expected to improve the use of available bandwidth

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete Cookies, you agree to the storing of cookies and related technologies on your device. See our privacy policy.







• WARF reference number P110040US01 describes the researcher's compatible transmitter system, known as a continuous aperture phased MIMO (CAP MIMO) system.

#### **Tech Fields**

• Information Technology: Networking & telecommunications

For current licensing status, please contact Jeanine Burmania at jeanine@warf.org or 608-960-9846