Researchers at the University of South Florida have developed a method that would increase the capacity and secrecy of MIMO transmitters.

In radio, multiple-input and multiple-output, or MIMO is a method for increasing the capacity of a radio link using multiple transmit and receive antennas. MIMO has become an essential element of wireless communication with the increasing importance in future generations. Due to low resolution precoder/combiner design in the standards significant mismatch between the transmitted signal and the received signal occurs in the case of a channel mismatch; as a result capacity and secrecy of the communication system is effected. Hence there is need for a unique approach which reduces the mismatch between the transmitted signal and the signal received at the intended receiver that increases capacity and secrecy.

Inventors at USF have devised a creative approach where artificial noise, that reduces the mismatch between the transmitted signal and the signal that would be receiver at the desired receiver, is transmitted in the case of a predetermined combiner in an effort to maximize capacity and secrecy. The transmitted artificial noise minimizes the error at the desired receiver while it increases the error at eavesdroppers. The invention is inherently designed to exploit the imperfections at the receiver, this invention does not require any changes to the receiving device. It can be used at any transmitter that desires to exploit this invention, even by devices that are designed to communicate using standards that were completed.

**ADVANTAGES:**

- Increased capacity
- Increased secrecy
- Modifies only transmitter, standard receiver is used
- Compatible with old standards, no standardization required

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The Error Vector Magnitude at Desired and Eavesdropping Users Using Regular Transmission and Artificial Noise Transmission