

ABSTRACT

Precoding improves MIMO Spatial Multiplexing performance by send MIMO CSI from receiver to transmitter in precoding metric index form. Index is a little amount bits that sent through limited feedback channel. Those bits translated by transmitter into new precoding metric that used to adapt symbols stream at transmitter with current channel condition.

Simulation results on WiMAX showed that precoding at MIMO without antenna spatial correlation raised MIMO channel capacity up to 3 bit/s/Hz on all velocities variation. At MIMO with antenna spatial correlation $0,5\lambda$, up to 2 bit/s/Hz on all velocities variation.

On performance, precoding at MIMO without antenna spatial correlation gave gain 10,5 dB on 3 kmph, 18,5 dB on 50 kmph and also 18,5 dB on 120 kmph. At MIMO with antenna spatial correlation $0,5\lambda$, precoding gave gain 15 dB on 3 kmph, 22,5 dB on 50 kmph and 18 dB on 120 kmph. So, MIMO-precoding on WiMAX is appropriate for data communication on high user velocity.

Keywords:

Precoding metric, codebook, MIMO spatial multiplexing, Zero Forcing, channel capacity, WiMAX, Rayleigh channel, Jakes model.

