Analysis of transmit-receive diversity in Rayleigh fading

ABSTRACT

We analyze the error performance of a wireless communication system employing transmit-receive diversity in Rayleigh fading. By focusing on the complex Gaussian statistics of the independent and identically distributed entries of the channel matrix, we derive a formula for the characteristic function (c.f.) of the maximum output signal-to-noise ratio. We use this c.f. to obtain a closed-form expression of the symbol error probability (SEP) for coherent binary keying. The method is easily extended to obtain the SEP for the coherent reception of M-ary modulation schemes.