具空時編碼多載波分碼多重存取行動通訊系統之多用戶檢測研究

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摘 要

本篇論文，乃在頻率選擇性通道(frequency selective fading channels)上，針對具有空時編碼多載波分碼多重存取(space-time coded multi-carrier code-division multiple-access, STC-MC-CDMA)行動通訊系統進行多用戶檢測效能研究與探討。在STC-MC-CDMA系統中我們應用Alamouti ’s空時編碼產生兩組具有傳送分集(transmit diversity)之架構，並在接收端以兩根接收天線來探討時間分集(temporal diversity)與空間分集(spatial diversity)對效能所產生的增益。　　從模擬結果顯示，在最小均方誤差(minimum mean square error, MMSE) 檢測法、回復正交結合(orthogonality restoring combining, ORC) 檢測法、等增益結合(equal gain combing, EGC) 檢測法、控制等化結合(controlled equalization combining, CEC) 檢測法等四種檢測法中，MMSE檢測法對系統效能之改善比其他三種檢測法好很多。此外，由於空時分集(spatial-temporal diversity)之增益，使用STC-MC-CDMA系統在雙根接收天線時之系統效能比傳統之MC-CDMA系統有10dB的增益。

關鍵詞 : 具空時編碼 ; 頻率選頻性衰退通道 ; 最小均方誤差 ; 時間分集 ; 空間分集

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