直序分碼多工擷取下差分相位解調之非同調偵測

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摘 要

在本論文裡我們探討多訊符相差偵測 (Multiple Symbol Differential Detection) 及 Viterbi解碼相差偵測 (Viterbi-decoding Differential Detection) 應用於 DS-CDMA 系統之可行性，多訊符相差偵測在 AWGN 通道為一種有效的非同調解調方式，若考慮 MPSK 調變器，此種方法所得到的性能比非常趨近同調檢測，然而在 frequency-selective fading 中，探討其可行性之研究並不多，本論文研究將多訊符序列偵測結合耙式接收器 (Rake receiver) 來做信號的解調方法。傳統上，耙式接收器有兩種的解調方式，一為同調檢測，另一為非同調檢測。在同調的解調方式上，每一耙式接收器的路徑均須做通道估測，優點為性能比的提昇，缺點為複雜度與運算量的增加，相反的，在非同調的解調系統中，相對於同調解調則是性能比的衰退與複雜度的簡化，我們建議了一種多訊符序列偵測耙式接收器，針對一個 DS-CDMA 系統，我們進行電腦模擬研究，研究結果顯示，若僅考慮應判決之解碼器，耙式接收器的路徑越多與解調器的多訊符決定區間越長，性能比將越好，這在傳統一個訊符的相差解調是不會發生的。更進一步地，我們在利用 Viterbi解碼相差偵測，這種在多個狀態之後才做決定的方式，使我們整個系統的效能得到更佳的改善。

關鍵詞 : 直序分碼多工擷取系統 ; 差分相位解調 ; 非同調偵測 ; 多訊符相差偵測 ; 耙式接收機

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