下鏈分碼多工系統中使用多用戶檢測器處理多重路徑信號

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摘 要

本篇論文主要提出在下鏈分碼多工系統中，使用多用戶檢測器來解決多重路徑的干擾。在實際無線通訊環境中，多重路徑會造成特徵波形失真，而使得解相關多用戶檢測器的效能嚴重降低，也破壞了抵抗遠近問題的能力。因此，在本篇論文中，我們提出了TLS (Total Least-Squares)及MD-MUSIC (Multidimensional Multiple Signal Classification)估測方法為基礎的線性多用戶檢測器(Linear Multiuser Detector, LMD)，在幾個情況下模擬後，發現所提出的檢測器對於多重路徑所引起的特徵波形失真具有強?性。 接著提出的架構中，使用陣列天線應用在基地台上，在下鏈的通道可以視為一個多輸入單輸出系統。當在基地台使用空間處理，各個對應的用戶使用時間處理時，我們設計隨時間改變的權重，使得MAI可以完全消除。而為了充分利用路徑分集，我們在所對應的用戶接收機，使用最大比例合成技術(Maximum Ratio Combining, MRC)。而經由分析及模擬結果，證明了系統的效能被充分的改善。

關鍵詞 : 多重路徑 ; 空間-時間處理 ; 多重接取干擾 ; TLS ; MD-MUSIC ; 線性多用戶檢測器 ; 陣列天線 ; 最大比例合成

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