

跳時PAM超寬頻多入多出系統的多用戶檢測和盲蔽式通道估計技術

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摘要

本篇論文架構於跳時 (time-hopping) 脈波振福調變 (PAM) 之超寬頻 (UWB) 脈波無線電 (IR) 通訊系統，主要分成多用戶檢測及盲蔽式信號接收兩部分。本文提出數種線性多用戶檢測器，在頻率選擇性衰減通道，對多用戶存取干擾 (MAI) 進行有效抑制，順利的擷取出目標資訊位元。而後我們使用了三種行動台 (MS) 接收機。其中一種是匹配濾波器接收機(matched filter, MF)，另一種則是為了最小化輸出功率 (minimum output energy, MOE) 接收機以及強制歸零 (zero forcing, ZF) 接收機。然而這兩種接收機均須仰賴精確的通道估計，因此我們便推演出了一種盲蔽式 (blind) 的通道估計法則，同時針對幾個可能有關因子，分析通道估計準確度的相對影響。而由驗證分析的部分可發現，強制歸零接收機不僅改善了遠近 (near-far) 效應、多用戶存取干擾問題，同時對於系統效能亦有所增益。

關鍵詞：跳時；超寬頻；線性多用戶檢測；多用戶存取干擾；盲蔽式信號接收；強制歸零

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