Performance Comparison of Resource Allocation without Feedback in Wireless Body Area Networks by Various Pseudo Orthogonal Sequences

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Abstract : Wireless Body Area Network (WBAN) is a short-range wireless communication around human body for various applications such as wearable devices, entertainment, military, and especially medical devices. WBAN attracts the attention of continuous health monitoring system including diagnostic procedure, early detection of abnormal conditions, and prevention of emergency situations. Compared to cellular network, WBAN system is more difficult to control inter- and inner-cell interference due to the limited power, limited calculation capability, mobility of patient, and non-cooperation among WBANs. In this paper, we compare the performance of resource allocation scheme based on several Pseudo Orthogonal Codewords (POCs) to mitigate inter-WBAN interference. Previously, the POCs are widely exploited for a protocol sequence and optical orthogonal code. Each POCs have different properties of auto- and cross-correlation and spectral efficiency according to its construction of POCs. To identify different WBANs, several different pseudo orthogonal patterns based on POCs exploits for resource allocation of WBANs. By simulating these pseudo orthogonal resource allocations of WBANs on MATLAB, we obtain the performance of WBANs according to different POCs and can analyze and evaluate the suitability of POCs for the resource allocation in the WBANs system.

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