عنوان مقاله:

Physical Layer Performance Enhancement for Femtocell SISO/MISO Soft Real-Time WirelessCommunication Systems Employing Serial Concatenation of Quadratic Interleaved Codes

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خلاصه مقاله:

Serial Concatenation of Interleaved Codes (SCICs) is emerging as a promising technology to improve the physical layer (PHY) performance of modern wireless communication systemsin terms of bit-error rate (BER), mainly due to their outstanding coding gains and feasible decoding complexities. For theirchannel coding performance, an interleaver is a critical component since the Minimum Hamming Distance (MHD) between legitimated permutations of the encoded bit sequence isdirectly influenced by the interleaver design. In this treatise, the construction of permutation mapping for SCICs is consideredbased on quadratic congruence, and the results are compared with the system using matrix-based block interleavers where therandomization is performed by storing and looking up elements in a matrix configuration. The performance evaluations arecarried out in terms of BER for Single-Input Single-Output (SISO) and Multiple Input Single-Output (MISO) wireless communication systems in a femtocell propagation environment.The results reveal that employing quadratic interleavers yield lower BERs at both waterfall and error-floor regions, comparedwith the block interleavers.

کلمات کلیدی:

Error-correction coding, femtocell environment, interleaver design, minimum hamming distance, multiple-input single-output, soft real-time