多维映射BICM-ID系统的SISO解映射算法

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摘要　　通过修改二维映射下的MAX-LOG-MAP算法的概率计算函数，得到针对多维映射比特交织编码调制迭代译码(BICM-ID)系统的软输入软输出(SISO)解映射公式．提出一种简化MD-TS(Multi-Dimensional Tree-Searching)算法，该算法结合多天线系统下的树搜索算法，选择概率较大的可能发送符号矢量，而不是在整个矢量集合穷搜索，计算复杂度与选择的列表长度成正比．仿真结果表明，多维映射时，BICM-ID系统可以取得更优的渐进BER性能，且采用简化MD-TS解映射算法性能损失仅0　2dB左右．

关键词　　比特交织编码调制迭代译码(BICM-ID)　多维映射　软输入软输出解映射　多维树搜索

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Soft in soft out demapper for the BICM-ID system with multi-dimensional mappings

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Abstract

By modifying the probability function of the MAX-LOG-MAP algorithm of two-dimensional mappings, a soft in soft out demapper is derived for BICM-ID with multi-dimensional mapping. By combining with the tree-searching algorithm of multi-antenna systems, a simplified multi-dimensional tree-searching algorithm (MD-TS) is also proposed, whose computational complexity is decreased significantly by selecting the symbol vectors with high probability. The reduced complexity is in proportion to the list length. Computer simulations show that the asymptotic BER performance is improved compared with two-dimensional mappings and that the simplified MD-TS algorithm brings only about 0　2dB performance degradation.

Key words　bit-interleaved coded modulation with iterative decoding　multi-dimensional mapping　soft in soft out demapper　multi-dimensional tree-searching algorithm

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扩展功能

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