



MIMO-OFDM系统中稀疏信道估计算法研究

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Study on sparse channel estimation algorithm for MIMO-OFDM systems

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- 摘要
- 参考文献
- 相关文章

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摘要 针对多输入多输出正交频分复用系统,利用信道冲激响应的稀疏特性,提出1种新的MIMO-OFDM信道估计算法,简称为MIMO-MP算法.首先利用匹配追踪思想确定出非零抽头系数的位置,然后再采用最小二乘算法完成对非零系数值的2次估计,从而通过减少信道估计参数的个数降低算法复杂度.该算法具有较好的性能,但在剩余向量更新上还不是精确,通过改进剩余向量的更新方式,得到另一种性能更优的算法简称为MIMO-MMP算法.仿真结果验证了算法的有效性.

关键词: 正交频分复用 多输入多输出(MIMO) 稀疏信道 匹配追踪算法

Abstract: A novel MIMO-OFDM channel estimation algorithm is proposed by exploiting the sparsity property of channel impulse response. At first, the matching pursuit idea is used to detect the position of the nonzero tap coefficients, then the least square algorithm is utilized to estimate the exact value of the nonzero coefficients, so as to reduce the computational complexity of the algorithm by decreasing the numbers of the channel parameters being estimated. This algorithm has good performance, but the update of the residue vector is not exact, another algorithm called MIMO-MMP is acquired by modifying the mode of the residue vector update. MIMO-MMP algorithm has better performance. Simulation results demonstrate the validity of the algorithm.

Key words: orthogonal frequency division multiplexing(OFDM) multiple input multiple output(MIMO) sparse channel matching pursuit algorithm

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