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应用

联合LDPC解码的宽带电力线信道噪声抑制迭代方法

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摘要:

宽带低压电力线信道的噪声干扰很强,严重影响通信系统性能。本文提出一种联合LDPC解码的宽带电力线信道噪声抑制迭代方法。该方法利用LDPC解码与迭代噪声抑制相互促进的特点,在传统迭代噪声抑制算法基础上,通过增加LDPC解码器来对接收端均衡后的信号进行解码,以抑制信号中的干扰噪声,提高迭代过程中噪声估计的准确性,改善噪声抑制性能。本文方法的迭代收敛较快,噪声抑制性能好。仿真实验验证了本文方法的有效性。

关键词: 电力线信道;低密度奇偶校验;迭代噪声抑制;收敛

Iterative Noise Suppression Method United with LDPC Decoding in Broadband Power Line Channel

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Abstract:

In a broadband low voltage power line channel, the interference from channel noise is heavy and results in a poor communication performance. An iterative method integrating with the LDPC decoding is proposed to suppress the noise in broadband power line channel. When an LDPC decoding and an iterative noise suppression are combined, they can benefit each other, and further promote the communication performance. The LDPC decoder is introduced into the traditional iterative noise suppression algorithm to decode the equalized signal at a receiver, which can suppress the interfering noise effectively, increase the estimation accuracy for noise in the iterative process and then improve the noise suppression performance. The proposed method has a good performance for noise suppression and a fast convergence speed. The simulation experiments reveal the effectiveness of the proposed method.

Keywords: power line channel LDPC iterative noise suppression convergence

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