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一种新的用于Hammerstein预失真器的自适应结构

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A Novel Adaptive Structure for Hammerstein Predistorter

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摘要 针对目前的自适应预失真结构不利于高效的最小二乘算法直接对Hammerstein预失真器参数进行更新的问题，该文提出了一种新的自适应预失真结构。应用该结构可以得到Hammerstein预失真器中两个子系统的误差，因此可使用高效的最小二乘算法直接对Hammerstein预失真器进行自适应更新，避免了结构误差以及子系统误差不精确对预失真器性能的影响。仿真结果表明：该文提出的自适应结构可使Hammerstein预失真器快速高效地补偿带记忆效应功率放大器的非线性失真。

关键词： 预失真结构 Hammerstein预失真器 多项式 FIR滤波器

Abstract： Present adaptive predistortion structures make against the utilization of efficient least-square algorithms in the parameters update of Hammerstein predistorter. In order to solve the problem, a novel adaptive structure is proposed. Using the structure, errors of the two subsystems of a Hammerstein predistorter can be obtained, so efficient least-square algorithm can be used in the parameters update of a Hammerstein predistorter directly. By this means, the effect on the performance of predistorter induced by the structure error and the imprecision of subsystem errors become evitable. It is confirmed by computer simulation that Hammerstein predistorter could more efficiently compensate the nonlinear distortion of power amplifier with memory effects by the proposed adaptive predistortion structure.

Keywords： Predistortion structure Hammerstein predistorter Polynomial FIR filter

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