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输入输出测量噪声干扰下连续Hammerstein模型参数直接辨识

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摘要：

对输入输出测量噪声干扰下连续Hammerstein模型进行参数重组处理,得到线性微分方程。利用小波调制函数对该线性微分方程进行调制积分处理,得到等价的代数方程。在研究调制函数对输入输出测量噪声影响的基础上,提出用广义噪声模型来处理输入输出测量噪声并提出调制广义最小二乘算法来实现代数方程的无偏参数估计。最后利用奇异值分解(SVD）方法获得Hammerstein模型参数。数字仿真和工业应用实例验证了所提出方法的有效性和实用性。

关键词：

Hammerstein模型　调制函数　广义最小二乘　奇异值分解

Direct Parameter Identification of Continuous-time Hammerstein Model with Input/Output Measurement Noises

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Abstract:

With input/output measurement noises,parameters of continuous-time Hammerstein model were restructured to gain its equivalent linear differential equation.Modulation integral of the linear differential equation was conducted by wavelet modulation function(WMF) which got equivalent algebraic equation.

Modulation integral of input/output measurement noises were analyzed,then generalized noise model was put forward to deal with input/output measurement noises.The unbiased parameters of algebraic equation were obtained by modulation generalized least square algorithm.Finally, the parameter of Hammerstein model was achieved by singular value decomposition(SVD).The numerical simulation and industrial example were carried out to demonstrate the effectiveness and practical applicability of the algorithm.

Keywords: Hammerstein model;modulation function;generalized least square;singular value decompositionzz')" href="#"> Hammerstein model;modulation function;generalized least square;singular value decomposition

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