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A Class of Globally Convergent Multivariable Self-tuning Controllers

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Abstract

In this paper the multivariable self-tuning control algorithm presented in [1] is extended to multivariable systems having general time delay structure. The stability and convergence analysis for this algorithm is also established. It is first shown that even for multivariable systems with arbitrary time delay structurea this self-tuning controller has global convergence properties, i. e., with probability one, the system inputs and outputs are sample mean square bounded and the conditional mean square tracking error achieves its minimum global possible value for linear feedback control.

Key words—Stochastic multivariable systems, Self-tuning control, Arbitrary time delay matrix, Global convergence.