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A TEST FOR THE PRESENCE OF PURE FEEDBACK IN MULTIVARIATE DYNAMIC STOCHASTIC SYSTEMS

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Abstract. This paper describes a procedure for testing the presence of a pure feedback loop in a transfer function model for a multivariate discrete dynamic stochastic system. A modification of the portmanteau statistic based on sample cross-covariance matrices of the prewhitened series is proposed. The statistic is shown to be asymptotically distributed according to a χ^2-distribution with certain degrees of freedom under some pure feedback assumptions. Some numerical results are given to show the behavior of the proposed method.

Key words and phrases: Feedback loop, FPE criterion, multivariate autoregressive moving average model, portmanteau statistics, transfer function model.