

STATISTICAL ANALYSIS OF DYADIC STATIONARY PROCESSES*

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Abstract. In this paper we consider a multiple dyadic stationary process with the Walsh spectral density matrix $f_{\theta}(\lambda)$, where θ is an unknown parameter vector. We define a quasi-maximum likelihood estimator $\hat{\theta}$ of θ , and give the asymptotic distribution of $\hat{\theta}$ under appropriate conditions. Then we propose an information criterion which determines the order of the model, and show that this criterion gives a consistent order estimate. As for a finite order dyadic autoregressive model, we propose a simpler order determination criterion, and discuss its asymptotic properties in detail. This criterion gives a strong consistent order estimate. In Section 5 we discuss testing whether an unknown parameter θ satisfies a linear restriction. Then we give the asymptotic distribution of the likelihood ratio criterion under the null hypothesis.

Key words and phrases: Dyadic stationary process, information criterion, likelihood ratio criterion, quasi-maximum likelihood estimator, Walsh spectral density.