

## GEOMETRICAL STRUCTURE OF THE ARMA MODEL MANIFOLD AND ITS APPLICATION TO BAYESIAN METHODS

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In Bayesian methods for time series analysis, the Jeffreys prior is usually adopted as a noninformative prior. However, a superharmonic prior was proposed in estimating the AR(2) process by Tanaka and Komaki. Asymptotically, the spectral density estimator based on the latter has better performance than the one based on the Jeffreys prior, while a superharmonic prior does not always exist on the stochastic process. The existence of the prior for  $p = 2$  was shown by evaluating the sign of the sectional curvature of the AR model manifold. In this presentation, we investigate the geometrical structure of the ARMA( $p, q$ ) model manifold in the same manner. In particular, we show that the ARMA(1,1) model manifold has a positive curvature and it is not geodesically complete.