

论文与报告

基于Kalman滤波的白噪声估计理论

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摘要

应用Kalman滤波方法,首次提出了一种统一的和通用的白噪声估计理论.它可统一处理线性离散时变和定常随机系统的输入白噪声和观测白噪声的滤波、平滑和预报问题.提出了最优和稳态白噪声估值器,且提出了白噪声新息滤波器和Wiener滤波器.它们可应用于石油勘探地震数据处理,且为解决状态和信号估计问题提供一种新工具.两个仿真例子说明了其有效性.

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White Noise Estimation Theory Based on Kalman Filtering

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Abstract

By using the Kalman filtering method, a unified and general white noise estimation theory is presented for the first time. It can handle the filtering, smoothing and prediction problems in a unified framework for both the input white noise and measurement white noise in linear discrete time-varying and time invariant stochastic systems. The optimal and steady-state white noise estimators are presented, and white noise renovation filters and Winner filters are also presented. They can be applied to seismic data processing in oil exploration, and provide a new tool to solve the state and signal estimation problems. Two simulation examples show their effectiveness.

Key words [Input white noise estimators](#) [measurement white noise estimators](#) [deconvolution](#) [reflection seismology](#) [Kalman filtering method](#)

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