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Filtering based parameter estimation for observer canonical state space systems with colored noise. (English)  

Summary: This paper surveys the identification of observer canonical state space systems affected by colored noise. By means of the filtering technique, a filtering based recursive generalized extended least squares algorithm is proposed for enhancing the parameter identification accuracy. To ease the computational burden, the filtered regressive model is separated into two fictitious sub-models, and then a filtering based two-stage recursive generalized extended least squares algorithm is developed on the basis of the hierarchical identification. The stochastic martingale theory is applied to analyze the convergence of the proposed algorithms. An experimental example is provided to validate the proposed algorithms.

MSC:
93E12 Identification in stochastic control theory
93E11 Filtering in stochastic control theory
93E24 Least squares and related methods for stochastic control systems
93B10 Canonical structure

Keywords:
identification; observer canonical state space systems; colored noise; filtering algorithm; recursive generalized extended least squares

Full Text: DOI

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