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Hidden Markov Processes and Adaptive Filttering

We present several models of partially observed diffusion processes and describe the construction of adaptive Kalman-type filters in the situations where the systems depend on some unknown finite-dimensional parameters. The presented algorithms for the filters and parameter estimators have recurrent structure and the questions of their asymptotic optimality are discussed. The properties of the filters and estimators are studied in the asymptotics of small noise and large samples. For some nonlinear partially observed systems the construction and properties of the corresponding extended adaptive Kalman filters are discussed too.

1. Kutoyants, Y.A. (2025) *Hidden Markov Processes and Adaptive Filtering,* Springer Series in Statistics, Cham.