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1.6.9. Case 4: state space representation of a noisy process
1.6.9.1. An AR process disturbed by a white noise; 1.6.9.2. AR process disturbed by colored noise itself modeled by another AR process; 1.6.9.3. AR process disturbed by colored noise itself modeled by a MA process;
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2.2.5. A recursive weighted least squares estimator; 2.2.6. Observations on some variants of the least squares method; 2.2.6.1. The autocorrelation method; 2.2.6.2. Levinson's algorithm; 2.2.6.3. The Durbin-Levinson algorithm; 2.2.6.4. Lattice filters; 2.2.6.5. The covariance method; 2.2.6.6. Relation between the covariance method and the least squares method; 2.2.6.7. Effect of a white additive noise on the estimation of AR parameters; 2.2.6.8. A method for alleviating the bias on the estimation of the AR parameters
2.2.7. Generalized least squares method
2.2.8. The extended least squares method; 2.3. Selecting the order of the models; 2.4. References; Chapter 3. Matched and Wiener Filters; 3.1. Introduction; 3.2. Matched filter; 3.2.1. Introduction; 3.2.2. Matched filter for the case of white noise; 3.2.3. Matched filter for the case of colored noise; 3.2.3.1. Formulation of problem; 3.2.3.2. Physically unrealizable matched filter; 3.2.3.3. A matched filter solution using whitening techniques; 3.3. The Wiener filter; 3.3.1. Introduction; 3.3.2. Formulation of problem; 3.3.3. The Wiener-Hopf equation
3.3.4. Error calculation in a continuous physically non-realizable Wiener filter

Sommario/riassunto

The purpose of this book is to provide graduate students and practitioners with traditional methods and more recent results for model-based approaches in signal processing. Firstly, discrete-time linear models such as AR, MA and ARMA models, their properties and their limitations are introduced. In addition, sinusoidal models are addressed. Secondly, estimation approaches based on least squares methods and instrumental variable techniques are presented. Finally, the book deals with optimal filters, i.e. Wiener and Kalman filtering, and adaptive filters such as the RLS, the LMS and the
