6.432 STOCHASTIC PROCESSES, DETECTION AND ESTIMATION

Recitation 12 Outline

April 28, 2004

Discrete–Time Wiener Filtering

1. Discrete–Time Wiener–Hopf equation

   - Derivation from orthogonality of the estimation error
   - Relation to standard linear least squares equations
   - Error variance computation

2. Wide sense stationary processes

   - Noncausal discrete–time Wiener filter
   - Causal discrete–time Wiener filter
   - Analogies with continuous time filters

Prediction and Smoothing

1. Review of causal Wiener filter

2. General form of optimal prediction and smoothing filters

3. Example: first order spectrum in white noise