School of Electrical Engineering

Signal Theory: EQ1220 / EQ1210

Reading Assignment: Filtering, AR, and ARMA Processes (3/5) 2016–09–07,

Notice: Should be sent to "ra.signal.theory@ee.kth.se" before Lecture 6 (2016–09–14),
and after self assessment, papers are collected on Lecture 7 (2016–09–20).
The essay consists of three questions. If you successfully answer all questions, you obtain 1 bonus point for part A of the final exam. An essay with partially correct answers will give you 1/2 point.
For the answers you should not copy text from a textbook. Group work is also not allowed, but feel free to discuss with your fellows. The reports will be checked against plagiarism.
Be brief, i.e., at most 1 page.

Explain (in your own words) ...

1. ... what the cross correlation between two weakly stationary stochastic discrete-time processes is. Give also mathematical definition(s) and example(s).

2. ... what a discrete-time LTI-system is.

3. ... the different mathematical relations between the discret-time input (assumed to be a weakly stationary stochastic process) and output of a LTI-system. Elaborate in particular on the cross correlation and cross spectrum.

4. ... the properties of BIBO-stable AR-processes. For instance, you might use figures, numerical examples, concepts such as rational transfer functions or Yule-Walker equations, etc, to describe your understanding of the concept.
