

Lectures on Moment Problems in Signals, Systems and Control

Chris Byrnes, KTH, August 2008

Reference Material for Lectures 1 – 3

A. Some general background material on moments include:

1. *The Markov moment problem and extremal problems*, M. G. Krein and A. A. Nudel'man, AMS Translation Monographs, Vol. 50, Providence, 1977.

2. *Moments in mathematics*, H. Landau, ed., AMS, Providence, 1987.

B. We have reviewed some results on the stability and instability of partial realization and Pade approximations. The results stated, but not proved, on the algebraic degree, the stability degree and the positive degree in the deterministic and the stochastic partial realization problems can be found in the two papers:

1. C. I. Byrnes and A. Lindquist, Stability and instability of partial realizations, *Systems and Control Letters* 2 (1982), 99-105. [

2. C. I. Byrnes and A. Lindquist, On the partial stochastic realization problem, *IEEE Trans. Automatic Control* AC-42 (August, 1997), 1049--1070.

These papers are posted on the course website.

C. The English translation, by M.F. and B. F. Wyman, of Euler's paper, "De Fractionibus continuius dissertatio," on continued fractions and the irrationality of e appears in *Mathematical Systems Theory*, vol. 18, 1985, pp. 295 – 328.

This also posted on the course website, together with the journal editor's (CIB) comments.