



**Graduate Seminar (EEL 6936)**  
**Department of Electrical Engineering**  
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**Dr. Costas Georghiades**

Associate Dean for Research  
Texas A&M University, College Station, TX  
Friday, April 25<sup>th</sup>, 2014, 3:30-4:30 p.m.  
Engineering Building B (ENB) Room 118

**On The Estimator-Correlator Receiver Structure And Its  
Implications on Receiver Design**

**Abstract**

The estimator-correlator (EC) receiver structure for the detection of stochastic signals in the presence of additive noise consists of a conditional-mean estimator which produces estimates of the stochastic signal part followed by correlation with the received data and subtraction of the estimated signal energy. This receiver structure is pleasingly very similar to that for the detection of deterministic signals in additive Gaussian noise and it has been shown by Kailath to be optimal when the signals are stochastic signal and not even Gaussian. The talk will discuss some of the implications of the EC structure on receiver design with applications to the multi-input, multi-output (MIMO) channel.

**Biography**



Costas N. Georghiades received the B.E. degree with distinction from the American University of Beirut in 1980, and the M.S. and D.Sc. degrees from Washington University, St. Louis, in 1983 and 1985, respectively, all in Electrical Engineering. He joined the Electrical Engineering Department at Texas A&M University in 1985 as an Assistant Professor, was promoted to Associate Professor with tenure in 1991 and to a Full Professor in 1995. In 1997 he was appointed to the J.W. Runyon Jr. Professorship and in 2002 he became the inaugural holder of the Delbert A. Whitaker Chair. He served as Group Leader of the department's Telecommunications & Signal Processing Group from 1997-2005 and became Head of the Department in 2005, a position he held until 2012. During his tenure as Department Head, he hired over 20 faculty, as

well as most of the current faculty of the Electrical and Computer Engineering Department at our Branch Campus in Qatar. Most of the young faculty hired went on to receive National Science Foundation (NSF) and other prestigious Young Investigator Awards and the amount of external funding in the department increased more than six-fold during his tenure. He currently serves as Associate Dean for Research in the College of Engineering and as Texas A&M Experiment Station (TEES) Assistant Agency Director for Strategic Initiatives and Centers.

Dr. Georghiades' general interests are in the application of information, communication and estimation theories to the study of telecommunication systems, and specifically wireless and optical systems. He was elected to Fellow of IEEE in 1998 "for contributions to the theory of optimal receiver design" and he is a registered Professional Engineer in Texas. Over the years he served in various editorial positions, including with the *IEEE Trans. on Communications*, the *IEEE Trans. on Information Theory* and as Editor-in-Chief of *IEEE Communication Letters*. He has been involved in organizing a number of conferences, including as General co-Chair for the 2004 *IEEE Information Theory Workshop*, as Technical Program Co-Chair for the 2005 *IEEE Communication Theory Workshop* and as General Co-Chair of the 2010 *IEEE International Symposium on Information Theory*. In other service, he served in the IEEE Communications Society's Awards Committee, as Chair of the Communication Theory Technical Committee and as Chair of the Fellows Evaluation Committee of the IEEE Information Theory Society. He currently serves in the IEEE Hamming Medal committee, the Communication Society's Awards committee and until recently was Chair of the Wireless Communication Letters Steering committee. In 2012 he received the IEEE Communication Society's Communication Theory Technical Committee Service Award.