



报告人: **Giorgio Picci**

时 间: **November 20th, 14:00-15:00**

地 点: **Meeting room 2-406, SEIEE**

邀请人: **Anders Lindquist**

An Empirical Bayes Approach to Frequency Estimation

Abstract:

In this talk we show that the classical problem of frequency estimation can be formulated and solved efficiently in an empirical Bayesian framework by assigning a uniform a priori probability distribution to the unknown frequency. We discover that the covariance matrix of the signal model is the discrete-time counterpart of the operator whose eigenfunctions are the famous *prolate spheroidal wave functions* introduced by Slepian and coworkers in the 1970's and widely studied in the signal processing literature although motivated by a different class of problems. The special structure of the covariance matrix is exploited to design an estimator for the hyperparameters of the prior distribution which is essentially linear, based on subspace identification. This is in contrast to standard parametric estimation methods which are based on iterative optimization algorithms of local nature. Simulations show that the approach is quite promising and seems to compare very favorably with classical methods from the literature.

Biography:

Giorgio Picci is Professor Emeritus with the University of Padova, Italy, Department of Information Engineering, since 1980. He graduated (cum laude) from the University of Padova in 1967 and since then has held several long-term visiting appointments with various American, Japanese and European universities among which Brown University, M.I.T., the University of Kentucky, Arizona State University, the Center for Mathematics and Computer Sciences (C.W.I.) in Amsterdam, the Royal Institute of Technology, Stockholm Sweden, Kyoto University and Washington University in St. Louis, Mo. He has been contributing to Systems and Control theory mostly in the area of modeling, estimation and identification and published over 100 papers and a joint book with Anders Lindquist on stochastic systems which has been recently translated into Chinese. Giorgio Picci is a Life Fellow of the IEEE, a Fellow of IFAC and a foreign member of the Swedish Royal Academy of Engineering Sciences.