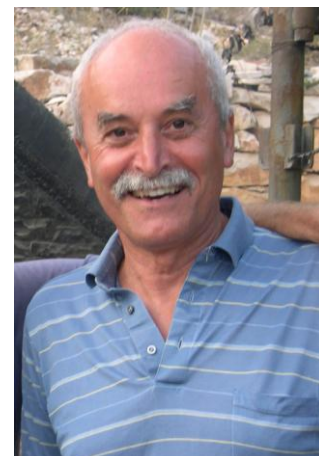# 学术报告会

时间：2013年5月27日(周一)14:00-15:00

地点：电院群楼2-410会议室

Modeling Complex Systems by Generalized Factor Analysis

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Abstract:

We propose a new modeling paradigm for very large dimensional aggregates of stochastic systems. Generalized Factor Analysis (GFA) models have been introduced recently and are used to describe large capital asset markets in econometrics. These models describe the observable outputs as the sum of a flocking plus an uncorrelated idiosyncratic noise component. The flocking component describes a sort of collective orderly motion which admits a very simple mathematical description while the idiosyncratic component describes weakly correlated noise. We first discuss several examples of modeling by GFA representations in engineering and biology. For wide-sense stationary systems the character and existence of GFA models is completely clarified. The extraction of the flocking component is discussed for a simple class of random systems.

Biography:

Giorgio Picci is Professor Emeritus with the Department of Information Engineering, University of Padova, Italy. He 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 of stochastic systems and published over 100 papers and edited three books in this area. He has been involved in various joint research projects with industry and state agencies. He has been chairman of the IFAC Technical Committee on Stochastic Systems, past member of the EUCA council, project manager of the Italian team for the Commission of the European Communities Network of Excellence in System Identification (ERNSI) and general coordinator of the Commission of European Communities IST project RECSYS, in the fifth Framework Program. Giorgio Picci is a Life Fellow of the IEEE, Fellow of the International Federation of Automatic Control (IFAC) and foreign member of the Swedish Royal Academy of Engineering Sciences.