

Anders Lindquist
Shanghai Jiao Tong University

“On Moment Problems in Robust Control, Spectral Estimation, Image Processing and System Identification”

Host: Prof. John S. Baras
2168 AVW

Lecture: 11:00 a.m., Wednesday, May 3, 2017



Abstract – Moment problems are ubiquitous in both mathematics and engineering. Such inverse problems are typically underdetermined and give rise to families of particular solutions. Therefore finding a solution that also satisfies a natural optimality criterion and additional design specifications is an important general problem in engineering. Many problems in circuit theory, power systems, robust control, signal processing, spectral estimation, statistical modeling, image processing and identification lead to a non-classical version of the moment problem, reflecting the importance of rational functions in engineering applications. Although this version of the problem is nonlinear, there exists a natural, universal family of strictly convex optimization criteria defined on the convex set of particular solutions. This provides a powerful paradigm for smoothly parameterizing, comparing and shaping the solutions based on various additional design criteria and enables us to establish the smooth dependence of solutions on problem data.

Bio - Anders Lindquist is presently Zhiyuan Chair Professor at Shanghai Jiao Tong University in China and an Emeritus Professor at the Royal Institute of Technology (KTH), Stockholm, Sweden. Before then he had a full academic career in the United States, after which he was appointed to the Chair of Optimization and Systems Theory at KTH, where he also served as the Director of the Center for Industrial and Applied Mathematics. For ten years he was also the Head of the Mathematics Department there. Lindquist is a Member of the Royal Swedish Academy of Engineering Sciences, a Foreign Member of the Chinese Academy of Sciences, a Foreign Member of the Russian Academy of Natural Sciences, an Honorary Member the Hungarian Operations Research Society, a Life Fellow of IEEE, a Fellow of SIAM, and a Fellow of IFAC. He is an honorary doctor at the Technion, Israel, and the recipient of the 2009 Reid Prize in Mathematics from SIAM and of the 2003 Axelby Outstanding Paper Award from the IEEE Control System Society.

